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PARADOX RESEARCH IN MANAGEMENT SCIENCE: LOOKING BACK TO MOVE FORWARD

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ABSTRACT

Paradox studies offer vital and timely insights into an array of organizational tensions. Yet this field stands at a critical juncture. Over the past 25 years, management scholars have drawn foundational insights from philosophy and psychology to apply a paradox lens to organizational phenomena. Yet extant studies selectively leverage ancient wisdom, adopting some key insights while abandoning others. Using a structured content analysis to review the burgeoning management literature, we surface six key themes, which represent the building blocks of a meta-theory of paradox. These six themes received varying attention in extant studies: Paradox scholars emphasize *types* of paradoxes, *collective approaches*, and *outcomes*, but pay less attention to *relationships* within paradoxes, *individual approaches*, and *dynamics*. As this analysis suggests, management scholars have increasingly simplified the intricate, often messy phenomena of paradox. Greater simplicity renders phenomena understandable and testable, however, oversimplifying complex realities can foster reductionist and incomplete theories. We therefore propose a future research agenda targeted at enriching a meta-theory of paradox by reengaging these less developed themes. Doing so can sharpen the focus of this field, while revisiting its rich conceptual roots to capture the intricacies of paradox. This future research agenda leverages the potential of paradox across diverse streams of management science.

INTRODUCTION

The thinker without paradox is like a lover without feeling: a paltry mediocrity.

S. Kierkegaard

Only the paradox comes anywhere near to comprehending the fullness of life.

C. G. Jung

Paradoxes stare us in the face – taunting our established certainties, while tempting our untapped creativity. They denote persistent contradictions between interdependent elements. While seemingly distinct and oppositional, these elements actually inform and define one another, tied in a web of eternal mutuality. Examples abound across phenomena and levels of analysis in management science. Macro studies depict field and organizational-level paradoxes such as cooperation and competition (Brandenburger & Nalebuff, 1996; Raza-Ullah, Bengtsson, & Kock, 2014), exploration and exploitation (Andriopoulos & Lewis, 2009; Raisch & Birkinshaw, 2008), profits and purpose (Jay, 2013; Smith, Gonin, & Besharov, 2013), or stability and change (Audia, Locke, & Smith, 2000; Farjoun, 2010). At more micro levels, individual and team-level studies emphasize paradoxes of novelty and usefulness (Miron-Spektor, Erez, & Naveh, 2011), learning and performance (Van Der Vegt & Bunderson, 2005), or self-focus and other-focus (Zhang, Waldman, Han, & Li, 2015).

Insight from paradox traces back to deep theoretical roots, with rich foundations in philosophy and psychology that include the works of Aristotle, Confucius, Freud, Hegel, Jung, Kierkegaard, and Lao Tsu (see Chen, 2008; Hampden-Turner, 1981; Harris, 1996; Smith & Berg, 1987). Yet even as these ideas emerge from ancient roots, paradoxes intensify, as contemporary

organizations and their environments become increasingly global, fast-paced, and complex. Global competition requires organizations to sell high-quality products at low prices and to offer globally consistent services while responding to varied local needs (Marquis & Battilana, 2009). Fast-changing business contexts create seemingly irreconcilable demands for short-term profits and long-term orientation (Slawinski & Bansal, 2015). Environmental complexity involves a broad array of stakeholders and interest groups holding competing yet equally valid demands, which leads to perplexing choices (Scherer, Palazzo, & Seidl, 2013). These paradoxical tensions surface as organizations embed distinct institutional logics (Besharov & Smith, 2014) or multiple organizational identities (Besharov, 2014; Fiol, 2002). Senior leaders experience the persistent tug-of-war emergent from strategic paradoxes (Smith, 2014), while middle managers and employees feel such complexity in their everyday work practices (Smets, Jarzabkowski, Burke, & Spee, 2015), socio-emotional relationships (Fairhurst & Putnam, 2014), and individual identities (Kreiner, Hollensbe, Sheep, Smith, & Kataria, 2015).

As paradoxical dynamics become more salient in contemporary organizations, scholars increasingly explore their nature, approaches, and impact. Some scholars posit definitions, constructs, and relationships to build theory on paradox (Smith & Lewis, 2011). Others explore paradoxical relationships applied to specific phenomena (Hahn, Preuss, Pinkse, & Figge, 2014). Still others use paradox as a tool for theorizing (Dameron & Torset, 2014). This versatility of applications renders paradox a meta-theory (Lewis & Smith, 2014), applying a set of key constructs and principles across phenomena, contexts, and theories (Pierce & Aguinis, 2013). Paradox as a meta-theory offers a powerful lens for management science, providing deeper understandings of constructs, relationships, and dynamics surrounding organizational tensions, while also enriching extant theories and processes of theorizing.

However, as paradox studies continue to grow and diversify, taking stock of what research has (and has not) illuminated allows for both shared insights and distinct contributions, while assessing key gaps in our understanding. Scholars have not yet conducted a comprehensive review of this literature. The goals of this paper, therefore, are to systematically review the last 25 years of paradox studies to surface common themes that help delimit, structure, and unify this meta-theoretical perspective, and to propose a fruitful and energizing agenda for future research.

To do so, we conducted a content analysis (Krippendorff, 2013) of paradox studies in management research. We sampled 133 articles that explore the nature of paradox broadly, apply a paradox lens to specific phenomena, and/or elaborate paradox as a tool for theorizing. Looking across each of these approaches, we surface six themes of a paradox meta-theory, organized into three categories. The *nature* of paradox includes *types* of paradoxes, and *relationships* within paradoxes. *Approaches* to paradox involve *individual approaches* and *collective approaches*. Finally, *impact* contains the themes of *outcomes* and *dynamics.* Each theme resonates with foundational ideas about paradox from early philosophy and psychology; however, our analysis suggests that these themes attracted varying degrees of research attention in management studies. Three of the themes – types, collective approaches, and outcomes – have been studied extensively, while the remaining three – relationships, individual approaches, and dynamics – have received considerably less emphasis. With its growth and expansion, paradox studies have overlooked more intricate insights from early theorists.

While greater simplicity renders phenomena understandable and testable (Smaling, 2005), oversimplifying complex realities can also foster reductionist and incomplete theories (Cilliers, 1998). Hence, theory building has dual needs: simplicity, which provides parsimony and pragmatism, and complexity, which ensures goodness of fit and comprehensiveness. Therefore, we propose a research agenda that embraces the simplicity of the key theoretical building blocks,

while also leveraging early foundations that capture currently underrepresented intricacies of paradox. Taken together, this comprehensive review and future agenda seeks to expand the creative power of paradox in management science.

Our analysis complements insights from Putnam, Fairhurst, and Banghart (2016; this issue). Reviewing studies of paradox, dialectics, and contradictions across a wide swath of scholarly paradigms, they similarly clarify key elements of a paradox meta-theory to serve as building blocks for future research. Their emphasis on processes, relational dynamics, emotions and discourse strengthens our call for research on relationships, individual approaches and dynamics, and offers additional recommendations for addressing these topics in future research.

The remainder of this article is organized into three sections. In the first section, '*What is Paradox?*', we delineate our field of interest by tracing the foundations of paradox thought, defining the concept of paradox within the management domain, and depicting paradox as a meta-theory. We then present a comprehensive review of paradox studies in management published between 1990 and 2014 in the section '*The Past 25 Years of Paradox Research*'. We expand on the six key themes, and demonstrate their varying role in recent research. Leveraging insights from this review, our final section, '*The Next 25 Years of Paradox Research*', explicates a future research agenda.

WHAT IS PARADOX?

Over the past 25 years, management scholars have sought to sharpen and apply a paradox lens. Ideas about paradox, however, draw from a much older tradition, with deep roots in philosophy and psychology. We begin by discussing such foundational insights. Informed by these origins, we highlight criteria central to understanding paradox in the management domain, helping further delineate what is (and is not) paradox. We then position paradox as a meta-theory,

illustrating how the paradox lens has influenced a broad range of research in management science.

Foundations

Paradox is a time-proven concept,[1] with roots residing in both Eastern and Western philosophy. Eastern roots applied paradox as a lens for exploring the nature of existence. Best illustrated by the Taoist yin-yang symbol, paradox highlights opposites (light-dark, masculine-feminine, life-death), which are viewed as interdependent, fluid, and natural (Chen, 2002; Peng & Nisbett, 1999). While individuals might experience tensions between oppositional elements, Buddhist, Hindu, and Taoist teachings pose that doing so obscures their underlying wholeness. Instead, these traditions stress the interdependence between oppositional elements, suggesting that paradox need not be resolved, but rather embraced and transcended (Capra, 1975).

Western philosophical foundations of paradox emerged from the ancient Greeks, as reflected in the term *para* (contrary to) and *doxa* (opinion). Similar to Eastern scholars, these philosophers depicted paradox as contradictory, yet also interdependent. This tradition, however, emphasized the contradictions, using opposites to surface unifying principles and underlying truths. Ancient philosophers valued rhetorical paradoxes that seemed absurd and irrational to 'tease' the mind and ultimately foster greater rationality and logical analysis. A well-known example is the Liar's Paradox, encapsulated in the statement 'I am lying.' Applying true-or-false thinking spurs a 'strange loop' – if one views the statement as true, it then becomes false; but if one thinks it false, it then appears true. Such rhetorical paradoxes are contradictory yet self-

[1] For in-depth treatises on paradox, we recommend Capra (1975), who delves into the interplay between Eastern and Western philosophies and corresponding patterns in the hard sciences, Schneider (1990), and his linking of philosophy and psychology to better understand inherent tensions of human existance and consciousness, and Smith and Berg (1987), who leverage foundational works to explore inherent paradoxes of group life in organizations.

referential (Smith & Berg, 1987). Philosophers nevertheless sought to "solve" paradox. In Socrates' dialogical method, ultimate truth emerged from adjudicating competing demands. This tradition, developed further by Plato, provided core principles for modern scientific inquiry, and Aristotle's formal logic emphasized the search for truth within contradiction (Sorensen, 2003).

More modern philosophy, particularly dialectical and existential approaches, blends Eastern and Western understandings of interdependent contradictions. Dialectical philosophers such as Hegel, posit a natural conflict between opposing elements (thesis and antithesis). Leveraging logic, this approach envisions a progressive process whereby the conflict enables resolution (synthesis). Such resolution serves as a new assertion (thesis) that spawns its alternative (antithesis) fostering a new solution (synthesis) and fueling a never-ending search for greater truth (Cunha, Clegg, & Cunha, 2002). In comparison, Kierkegaard (1954), the father of existentialism, articulated the existential paradox as a persistent ebb and flow between oppositional forces, specifically the finite (personal and social norms or restrictions) and the infinite (exploration and uncertainty). Rationality accentuates the finite, as formal logic enables order and structure that protects the conscience from fear of the infinite, but hinders the finding of greater meaning, eventually exacerbating awareness of the infinite (Schneider, 1990). Finite and infinite experiences remain locked in an ongoing mutually defining interaction.

Psychology, most pronounced in psychoanalysis, offers complementary foundations by exploring individual cognitive and emotional approaches to interdependent contradictions. Jung (1965), for instance, conceptualized the two-sidedness of the self (conscious and unconscious). Mental health arises from embracing interwoven opposites (trust-distrust, independence-dependence, love-hate), or, in Jung's terms, recognition that light enables shadow, as shadow accentuates the light (Schneider, 1990). Rothenberg (1979) found these tendencies amplified in studies of creative geniuses who deliberately sought out interdependent contradictions in nature

as inspiration: Einstein played with the simultaneity of objects in motion and at rest, Mozart engaged concordance and discordance in music, and Picasso sought visual images that conveyed light and dark. Yet human tendencies in response to paradox can also prove counterproductive, even pathological. According to Freud (1937), tensions generally foster anxiety, sparking defensiveness – such as avoidance, splitting, and projection. Any comfort enabled by such responses proves fleeting, however, as pulling toward one side or the other, eventually intensifies the tension in a double bind. Indeed, the psychoanalytic work by Adler and Frankl in Vienna prescribed paradoxical approaches, developing therapy that encourages movement toward, rather than away, from the angst of tensions; while Bateson and Watzlawick at the Mental Research Institute in Palo Alto stressed the potential to fuel paradoxical dynamics in vicious or virtuous cycles (Smith & Berg, 1987).

Defining Paradox

These philosophical and psychological foundations inspired early organizational theorists to define paradox and sharpen this lens for management science (Lewis, 2000; Poole & Van de Ven, 1989; Quinn & Cameron, 1988; Smith & Berg, 1987). Consistent with its origins, yet enabling parsimony for management studies, we define paradox as *persistent contradiction between interdependent elements*. This definition identifies two, core characteristics of paradox: contradiction and interdependence, which together inform the boundaries of paradox to sharpen the lens, while also broadening the tent, linking these studies with other related literatures.

Contradiction lies at the heart of paradoxical tensions. As early philosophers and psychologists explained, contradictions emerge as oppositional elements foster a tug-of-war experience. According to Cameron and Quinn (1988): "The key characteristic in paradox is the simultaneous presence of *contradictory*, even mutually exclusive elements" (p. 2). As Lewis

(2000) explained, organizational actors experience tension because the conflicting demands "seem logical in isolation but absurd and irrational when appearing simultaneously" (p. 760). Similarly, Poole and Van de Ven (1989) described paradoxes as "interesting tensions, oppositions, and contradictions between theories which create conceptual difficulties" (p. 564). The contrasting black and white slivers of the yin-yang depict this contradictory relationship.

Interdependence emphasizes the inextricable links between opposing elements. Scholars depict varying degrees of interdependence across oppositional forces. Early managerial writings describe oppositional forces as intertwined, but distinct. For example, Cameron (1986) suggested paradox involves "contradictory, mutually exclusive elements that are present and operate at the same time" (p. 545). According to these scholars, it is possible to separate elements, yet their simultaneity creates a greater sense of wholeness, and enables increased effectiveness and creativity (i.e., Poole & Van de Ven, 1989). In the yin-yang, the fit between the black and white slivers demonstrates this synergistic relationship, as distinct elements that create a unified whole. Other scholars describe contrasting elements as mutually constituted or ontologically inseparable. Existing on one continuum, these elements define one another, such that they can never be fully separated. The elements signify "two sides of the same coin" (Lewis, 2000, p. 761). Exploring group paradoxes, such as the interwoven needs for individual differences and collective cohesion, Smith and Berg (1987) explained that "the contradictions are *bound* together (…) The more that members seek to pull the contradictions apart, to separate them so that they will not be experienced as contradictory, the more enmeshed they become in the self-referential binds of paradox" (p. 14). In the yin-yang, the black and white dots that surface within their oppositional shade emphasize this mutual constitution.

The core characteristics of paradox engender its persistence. Smith and Lewis (2011) define paradox as "contradictory yet interrelated elements that exist simultaneously and *persist* over

time" (p. 382). Even as paradox involves a dynamic and constantly shifting relationship between alternative poles, the core elements remain, impervious to resolution. Rather interdependent contradictions incite a cyclical, relationship between opposing forces. This dynamic relationship suggests a processual perspective, understanding how each element continually informs and defines the other. Demands on management thus shift from a more conventional emphasis on control, decisions, and solutions toward a dynamic, ongoing process of 'coping with' (Handy, 1994) or 'working through' (Lüscher & Lewis, 2008; Smith & Berg, 1987) paradox.

Unpacking the core as contradictory and interdependent elements defines boundaries for paradox, while linking to related literatures such as dialectics and dualities (for more details, see also Putnam et al., 2016; this issue). Similar to paradox, these literatures explore interdependent contradictions, differing primarily in their emphasis and focus. Emerging from writings of Hegel, and adopted by political scholars such as Marx and Engels, the *dialectics* tradition describes opposing elements as a thesis and an antithesis (see e.g. Bakhtin, 1981; Benson, 1977). Dialectics literature accentuates power, conflict, and change in describing the interactions between underlying elements (Putnam, 2015). Through these interactions, Farjoun (2002) notes that, "organizational arrangements are produced, maintained, and transformed" (p. 850). Over time, these changes can lead to a unified synergy between alternatives – a synthesis.

Paradox scholars diverge from the dialectics tradition when the new synthesis renders the underlying tension obsolete – in dialectics the synthesis meets a newly emerging antithesis, while the tension in paradox persists. Dialectics prove paradoxical, though, when a new synthesis sustains the initial thesis and antithesis in relations to one another (Clegg, 2002; Langley & Sloan, 2011). For example, leaders might find a synthesis simultaneously meeting the needs of an existing product and innovation, such as building out novel products that build on rather than obliterate the current product's markets and technologies (Adler, Goldoftas, & Levine, 1999;

Eisenhardt & Westcott, 1988). However, even amidst such synergies, underlying tensions persist, emphasizing the paradoxical nature of exploring and exploiting (Smith & Lewis, 2011).

Dualities emphasize an interdependent relationship between contradictory elements. Drawing from scholars such as Giddens (1984) and Bourdieu (1977), duality scholars stress the interplay between contradictory elements as mutually constituted and ontologically inseparable, such that it would be impossible to describe one without the other (Smith & Graetz, 2006). These scholars have detailed such a relationship between stability and change (Farjoun, 2010; Feldman & Pentland, 2003), materiality and discourse (Orlikowski & Scott, 2008), or more generally, the material world and the symbolic world (Putnam, 2015). Duality scholars focus on changing, processual, dynamic relationships that remain in a constant state of becoming (Tsoukas & Chia, 2002). As with paradox insights, duality scholars highlight the relationship between alternatives, however place less stress on understanding their contradictions, inconsistencies, and conflicts.

Paradoxical insights apply widely, as increased environmental dynamism and complexity intensify the experience of paradox. As Quinn and Cameron (1988) noted, paradoxes are thus perceived more frequently in turbulent times. Smith and Lewis (2011) similarly argued that organizational paradoxes often remain latent, becoming salient particularly under conditions of plurality, change and scarcity. Plurality involves a diversity of views, informed by multiple stakeholders with varied demands (Denis, Langley, & Sergi, 2012). Attending to differing perspectives fosters a sense of being pulled in opposing directions. Diverse stakeholders pose competitive expectations, surfacing strategic conflicts (Donaldson & Preston, 1995). Change requires creating a future distinct from the present, inciting conflict between current practices and future opportunities. Leaders grapple with attempting to exploit existing competencies while exploring new opportunities (O'Reilly & Tushman, 2008; Raisch & Birkinshaw, 2008). Finally, scarcity frames resources as limited. The experience of excess resources, or slack, fuels

experimentation and creativity (Nohria & Gulati, 1996). In contrast, experiencing resources as scarce challenges the ability to meet multiple goals (Kanfer & Ackerman, 1989; Schmitt & Raisch, 2013), intensifying their recognition of tensions between competing demands (Porter, Webb, & Gogus, 2010). Environmental conditions of plurality, change, and scarcity serve as boundaries that intensify the salience and engagement with paradox.

Paradox as a Meta-Theory

As criteria become increasingly defined, and patterns both more elaborated and consistent, paradox emerges as a meta-theory on organizational tensions and their management (Lewis & Smith, 2014). A meta-theory represents "an overarching theoretical perspective" (Ritzer, 1990, p. 3). The value of such a meta-theory is two-fold. First, it seeks to define general principles to aid the study of and theorizing about widely varying phenomena (Pierce & Aguinis, 2013). Paradox as a meta-theory deals with principles of tensions and their management across multiple contexts, theories, methodological approaches, and variables (Lewis & Smith, 2014). We clarify such meta-theoretical principles in this paper to extend paradox theory, as well as aid other theories as they surface paradoxical tensions. Second, a meta-theory complements and may enable bridging between more specific, previously applied theories (Poole & Van de Ven, 1989; Lewis & Grimes, 1999). As such, it becomes a tool for 'meta-theorizing' (Ritzer, 2001) across multiple management theories. We demonstrate this potential by describing the application of paradox insights in three, diverse realms of management research: governance, leadership, and change.

Corporate governance examines firms' boards of directors, their responsibilities, as well as their interactions with organizational systems, practices, and members (Daily, Dalton, & Cannella, 2003). The governance literature identifies many persistent tensions, most often surrounding the relationship between the board and firm executives (Demb & Neubauer, 1992).

Applying a paradox lens, Sundaramurthy and Lewis (2003) explore co-existing yet competing governance needs for control and collaboration. They leverage agency theory to explicate the former, identifying critical board roles in monitoring executives and control mechanism to help curb opportunistic behavior, while stewardship theory helps detail the later, stressing potential for board-executive collaborations to fuel leaders' intrinsic motivation and foster more creative problem solving. While prior corporate governance work often depicted control and collaboration as contradictory demands, a paradox lens aided study of their interdependence and persistence. Examining actors' defensive responses to these tensions, Sundaramurthy and Lewis (2003) detail vicious, reinforcing cycles that ensue if governance pulls too far to either extreme.

Leadership research examines the effectiveness of different styles of influence (Van Knippenberg & Sitkin, 2013). Yet the diverse and changing nature of leaders' roles and interactions poses numerous, paradoxical demands (Denison, Hooijberg, & Quinn, 1995). Smith (2014) found that dynamic decision making, iterating between emphasis on exploration, exploitation, and their integration, helps leaders manage innovation tensions. Drawing on multiple case studies from healthcare providers, Denis, Lamothe, and Langley (2001) suggested shifting between forceful leadership and approval-oriented leadership to manage tensions between stability and adaptability during organizational change. Further, Smith, Besharov, Wessels, and Chertok (2012) proposed a paradox leadership model aimed at enabling social entrepreneurs to address contradictory, yet interdependent social and commercial demands. Similarly, Zhang et al. (2015) linked specific characteristics of paradoxical leaders with long term success.

Organization theory emphasizes tensions of change between the past and the future, often framed around ambidexterity. These studies denote the ability for organizations to simultaneously explore and exploit, thereby enabling superior, long-term firm performance (O'Reilly &

Tushman, 2008; Raisch & Birkinshaw, 2008). Increasing use of a paradox perspective has shifted the academic debate in this area from prescriptions that rely on separation (structural differentiation or sequential attention) towards more integrated approaches that enable synergies between exploration and exploitation (Andriopoulos & Lewis, 2009; Raisch, Birkinshaw, Probst, & Tushman, 2009). Further, studies illustrate how engaging paradox can fuel virtuous, reinforcing cycles as organizations learn to survive, thrive, and perform through innovation tensions (Smith, 2014; Smith & Tushman, 2005).

These examples illustrate the breadth of paradox as a meta-theory, and its potential application across organizational phenomena and theoretical debates in management. They also illustrate the power of paradox as a research lens to help advance theoretical debates and provide fresh insights in well-established research domains. We will now proceed with a more formal and comprehensive review of extant paradox research in the management domain.

THE PAST 25 YEARS OF PARADOX RESEARCH

Research Method and Findings

To examine paradox studies over the past 25 years we used content analysis (Berelson, 1971; Krippendorff, 2013; Weber, 1990), applying methods adopted in other recent reviews (e.g., Boyd, Haynes, & Zona, 2011; Caligiuri & Thomas, 2013; Laplume, Sonpar, & Litz, 2008). Literature reviews often seek to clarify antecedent-process-outcome relationships among core constructs, however, as Quinn and Cameron (1988) highlight, "paradox is not a dependent variable to be explained" (p. xv), but rather an ongoing process reflecting cyclical dynamics. Content analysis methods enabled us to identify and elaborate key theoretical themes across paradox studies (Laplume et al., 2008; Sonpar & Golden-Biddle, 2008). To ensure theoretical

transparency, reliability, and validity (Krippendorff, 2013; Weber, 1990), we followed a structured content analysis process (Duriau, Reger, & Pfarrer, 2007) involving four stages (sampling, coding, analysis, and interpretation) to inductively identify key themes.

We first adopted a rigorous, multi-stage process to develop our *sample* (Krippendorff, 2013). We began by identifying foundational paradox texts in management studies. While writings on paradox date back thousands of years, scholars began introducing these insights into management research in the late 1980s. Three early, strongly influential texts from that period are Smith and Berg (1987), Quinn and Cameron (1988), and Poole and Van de Ven (1989). These early works enabled a broad yet focused search, canvassing more micro, psychological domains (Smith & Berg, 1987), organizational studies across levels and perspectives emphasizing transformation and change (Quinn & Cameron, 1988), and more methodological, theory-building approaches in management science (Poole & Van de Ven, 1989). We further included Lewis (2000), which integrated these early texts. Winning AMR's 2000 Best Paper Award, this paper extended the audience for paradox scholarship, ensuring that we captured a broader scope of contemporary research within the management field.

We then searched for articles referring to at least one of these four foundational works on paradox in the management literature. By focusing on these works, we could ensure that we drew from studies that consistently applied a paradox lens by building on each other (Pfeffer, 1993). An initial search in *Business Source Premier* and the *Social Science Citation Index* led to 713 results. To filter articles based on research quality, we subsequently limited our sample to articles published in management journals with a 5-year impact factor of at least 3.00 in 2014 (according to the *Journal Citation Reports*), and excluded short papers such as book reviews and research notes, resulting in 256 articles. Finally, we analyzed the content of the papers to only include

those papers that adopt a paradox perspective beyond using the word paradox as a simple label. Our final sample includes 133 articles, which span 25 years of paradox research (1990 to 2014).

Second, we *coded* all of the articles in our final sample. We developed a codebook through iterative discussions between the authors until achieving consistency and stability across the codes (Krippendorff, 2013; Laplume et al., 2008). Our final set of codes includes a mix of nominal variables and open, non-scaled categories, which we used to code all of the articles.

Third, we *analyzed* the coded data from the previous phase to identify key themes in paradox research. We proceeded inductively: Two authors independently formed a set of key themes using the coded data. When necessary, these authors looked again at the full papers to identify themes. Similar to theory building from case studies (Eisenhardt, 1989), we then compared within themes to assess convergence and across themes to clarify distinctions. We resolved points of disagreement between authors through extensive discussions. Our review surfaced six key themes in the extant literature – types, relationships, collective approaches, individual approaches, outcomes, and dynamics. We concluded our theme-identification process after three rounds. At this point, at least one theme applied to each article, although most articles included multiple themes. Figure 1 summarizes the distribution of themes across the past 25 years. To better depict the shifts between themes, we consolidated the data in 5-year periods. This figure demonstrates an overall increase in the number of research articles applying a paradox lens, while also showing varying attention to different themes over time.

Insert Figure 1 about here

Fourth, we came to further *interpret* the themes during the writing process. Returning to early paradox literature in philosophy, psychology, and management, we interpreted the six

themes as the 'building blocks' of a paradox meta-theory. More specifically, we group these themes, as shown in Figure 2, within three, broad categories (nature, approaches, and impact).

Insert Figure 2 about here

The **nature** category encompasses research describing the underlying facets of paradox: *types* identifies and categorizes tensions that spark anxiety and a tug-of-war experience, while *relationships* examine the interplay between interdependent contradictions. The **approaches** category includes research that elaborates how actors address paradoxical tensions: *collective* approaches emphasize responses that involve inter-organizational, organizational, and group practices, while *individual* responses explore individual actors' capabilities, cognition, and emotional responses. Lastly, research within the **impact** category deepens understandings of the influence of distinct approaches: *outcomes* describe consequences of varied responses and *dynamics* elaborate cyclical processes that emerge as approaches address persistent tensions. Table 1 lists all articles included in our content analysis, identifying the building blocks within each article, noting the respective journal, as well as the type of article (empirical or theoretical).

Insert Table 1 about here

Building Blocks of Paradox Meta-Theory

Our content analysis surfaced six key themes that denote building blocks of paradox meta-theory. We allocate these themes into three categories (nature, approaches, and impact). To serve as resources for future research, Tables 2 to 4 summarize key issues within each category,

offering exemplary articles as guides. To provide a comprehensive overview, we include studies outside our sample.

Nature: Types. Research that examines types accentuates the diversity of levels, domains, and phenomena of paradox inquiry. This category treats paradox as a noun, a concrete, discernable tension between distinct elements, and highlights their contradictory and oppositional nature. Extant research dissects and depicts widely varying categories of paradoxes within and across organizations. Our analysis surfaced this building block as the most dominant theme within the past 25 years of research. Among the 133 paradox studies in our sample, 98 studies (74%) emphasized types of paradox.

Numerous studies apply paradox to delineate tensions across diverse contexts and levels of analysis, illustrating the ubiquity of this lens. Field-level studies investigate tensions at a macro level, noting how national culture might inform our approaches to distinctions (Fang, 2012), or recognizing specific paradoxes in inter-firm relationships, such as collaboration-competition tensions (Brandenburger & Nalebuff, 1996; Chung & Beamish, 2010; Das & Teng, 2000; Raza-Ullah et al., 2014). Others point to paradoxes embedded across specific fields, such as those between academics and practitioners (Bartunek & Rynes, 2014). Organization-level studies identify strategic paradoxes embedded in competing demands such as those between exploration and exploitation in ambidextrous firms (Andriopoulos & Lewis, 2009; Raisch & Birkinshaw, 2008; Smith, 2014) or social mission and financial performance in social enterprises (Hahn et al., 2014; Jay, 2013; Smith et al., 2013). These tensions emerge across organizational capabilities including identity (Ashforth & Reingen, 2014; Besharov, 2014) and routines (Feldman & Pentland, 2003; Orlikowski, 1992). Studies further identify tensions in groups, such as in team creativity (Miron-Spektor, Erez, et al., 2011; Rosso, 2014). At the individual level, research depicts contradictory elements of leadership capabilities, including tensions between coordinating

or monitoring activities and innovating or brokering new activities (Denison et al., 1995), participative and directive leadership (Gebert, Boerner, & Kearney, 2010), treating subordinates uniformly, while also encouraging their individuality (Zhang et al., 2015). Other studies depict employees experiencing tensions in their everyday work, including conflicts between passion and profits (Besharov, 2014), change and stability (Huy, 2002; Lüscher & Lewis, 2008), or learning and performance (Dobrow, Smith, & Posner, 2011; Van Der Vegt & Bunderson, 2005). Still other research illustrates paradoxical tensions nested across multiple levels of analysis (Andriopoulos & Lewis, 2009; Bradach, 1997; Jarzabkowski, Lê, & Van de Ven, 2013; Schreyögg & Sydow, 2010).

Scholars further described categories to group types of tensions. For example, Smith and Lewis (2011) delineate learning, organizing, belonging and performing paradoxes (see also Lewis, 2000; Lüscher & Lewis, 2008). *Learning* paradoxes depict tensions between old and new, stability and change, or exploration and exploitation (Carmeli & Halevi, 2009; Farjoun, 2010; Graetz & Smith, 2008; Klarner & Raisch, 2013; Lavie, Stettner, & Tushman, 2010; O'Reilly & Tushman, 2008; Raisch & Birkinshaw, 2008; Smith, 2014). Tensions of learning further raise different temporal orientations between the short term and the long term (Das & Teng, 2000; Slawinski & Bansal, 2015). *Organizing* paradoxes examine how firms create competing designs and processes to achieve a desired outcome. For instance, studies describe organizing tensions between alignment and flexibility (Adler et al., 1999; Gibson & Birkinshaw, 2004; Smith & Tushman, 2005) or between controlling and empowering employees (Gebert et al., 2010; Sundaramurthy & Lewis, 2003). *Belonging* paradoxes emphasize competing identities within organizations (Albert & Whetten, 1985; Ashforth & Reingen, 2014), demonstrated by the tensions between individual and collective affiliations (Smith & Berg, 1987; Wareham et al., 2014). These competing identities can also occur across organizations, in particular when they

seek to both cooperate and compete. Finally, *performing* paradoxes deal with the varied goals and outcomes stemming from different internal and external demands a company is facing (Margolis & Walsh, 2003), or tensions between stakeholders interpreting organizational outcomes differently (Jay, 2013). Our analysis revealed an emphasis on learning paradoxes, buoyed by extensive interest in exploration and exploitation tensions that emerge in attempts to enable ambidexterity and drive organizational change. Less research emphasizes belonging paradoxes, such as those emerging between competing identities.

Nature: Relationships. Relationship studies detail the interplay between core elements of paradox. Such work elaborates opposing forces as mutually constituted, self-referential, and/or simultaneously vital in the long-term. This building block stresses paradox as a verb, emphasizing the persistent interactions between opposing elements. Illustrative works show the interwoven nature of competing demands such as structure and action (Poole & Van de Ven, 1989), materiality and discourse (Putnam, 2015), and change and stability (Farjoun, 2010). Compared to studies that identify types of tensions, fewer studies highlight the nature of relationships (56 Studies, 42% of total).

Echoing distinctions in early management scholarship, studies depict variation in the nature of paradoxical relationships. Some studies describe the underlying elements of paradox as complementary, noting how they inform one another (Chreim, 2005) and are both vital for long-term success (Buenger, Daft, Conlon, & Austin, 1996). Other studies suggest a more integrated relationship, depicting the elements as mutually constituted – each pole containing the seeds of its opposite (Khazanchi, Lewis, & Boyer, 2007) and ontologically inseparable such that one does not exist without the other (Orlikowski & Scott, 2015). For example, Farjoun (2010) conceptualizes stability and change as dualistic forces that are not only complementary, but essentially define one another. According to this perspective, stability only occurs when the system makes constant

changes in response to variability in the environment. Weick, Sutcliffe, and Obstfeld (1999) illustrate the ongoing relationship between stability and change by noting that high-velocity trains remain stable on the tracks because of ongoing shifts in response to subtle variations. Similarly, organizations can only accomplish variability when they have clear, stable rules or routines. Klein, Ziegert, Knight, and Xiao (2006) show how stable emergency room routines enable doctors to dynamically shift leadership roles in response to changing situations.

Studies further explore whether the relationships between opposing poles are socially constructed or inherent to organizing (see Clegg, 2002). Some paradox scholars argue that the contradictory yet interdependent relationships between alternative poles only come into being through the rhetoric and cognitive frames that juxtapose their oppositional tensions. As Poole and Van de Ven (1989) observe, "whereas logical paradoxes exist in timeless, abstract thought, social paradoxes are about a real world subject to its temporal and spatial constraints" (p. 565). Their contradictory nature surfaces or recedes through the mental compression or expansion of space and time. Others argue that while organizations may be a social construction unto themselves, this process creates boundaries between what is and what isn't and inherently infuses organizational life with oppositional tendencies (Ford & Backoff, 1988).

Smith and Lewis (2011) argue that paradoxes are always both, inherent *and* socially constructed. Paradoxical relationships consistently emerge as the act of organizing creates boundaries that describe an element and its opposite. These oppositional forces are interdependent, defined by one another. However, paradoxical relationships may remain latent, only becoming salient through environmental conditions or when juxtaposed through individual framing. As previously stated, increased plurality, change, and, scarcity in the environment help surface latent tensions (Smith & Lewis, 2011). Plurality involves competing demands from multiple stakeholders. For example, Adler et al. (1999) argued that competitive rivalry between

distinct groups of stakeholders intensifies the simultaneous needs for efficiency and innovation. Furthermore, change accentuates tensions as new capabilities compete with, and often render obsolete, the existing competencies (Huy, 2002; Lüscher & Lewis, 2008). Finally, scarcity challenges managers to meet competing yet coexisting demands with limited resources (i.e. time, financial resources, etc.), fueling a tug-of-war between divisions and/or stakeholders (Smith, 2014).

Individual cognitive frames can also surface paradoxical relationships by encouraging oppositional thinking (Lüscher & Lewis, 2008), applying a higher-order or meta-level perspective (Orlikowski, 1992), questioning initial assumptions to broaden perspective encompassing both extremes (Lado, Boyd, & Hanlon, 1997), separating levels of analysis (Khazanchi et al., 2007), and/or reconciling different time perceptions (Crossan, Cunha, Vera, & Cunha, 2005). For example, Chreim (2005) found that discursive strategies that influence how actors label and communicate elements expose the paradoxical relationship between continuity and change. Further, Smith et al. (2012) argued that pedagogical tools help surface interwoven yet competing demands between social missions and financial pressures. Scholars also explored the extent to which paradoxical frames may be culturally dependent on how national myths emphasize contradictory and interdependent relationships (Chen, 2014; Fang, 2010; Li, 2014).

As a tool for theorizing, scholars further note whether paradoxical relationships emerge as salient for the researchers or for the practitioner. For example, in his study of the Cambridge Energy Alliance, Jay (2013) noted how he, as a scholar, came to understand the organization's definitions of success as paradoxical, even if the organization itself did not. Moreover, in their action research study at Lego, Lüscher and Lewis (2008) made the paradoxical relationship between stability and change salient for the managers, informing their reactions to these tensions. In contrast, Smith (2014) noted how senior leaders of strategic business units in the high-tech

industry depicted a complex relationship between their exploratory and exploitative efforts, understanding and framing them as dilemmas that needed to be solved and paradoxical relationships that defied resolution.

Insert Table 2 about here

Approach: Collective. 'Approaches' groups research exploring responses to the challenges posed by paradoxes (see also Putnam and colleagues in this issue for a classification of responses to paradoxical tensions). Studies addressing collective approaches explicate organizational practices, processes, and structures proved pervasive in our sample (61 studies; 46% of our sample). These studies examine collective strategies at varied levels of analysis – population (O'Neill et al., 1998); inter-organizational (Chung & Beamish, 2010; Sydow, Lerch, Huxham, & Hibbert, 2011); organizational (O'Reilly & Tushman, 2008; Schmitt & Raisch, 2013); and teams (Blatt, 2009; Miron-Spektor, Gino, & Argote, 2011). Further, several scholars have stressed that paradox is best addressed across multiple organizational levels (Andriopoulos & Lewis, 2009; Raisch et al., 2009).

A number of studies categorize collective responses to competing demands (see Jarzabkowski et al., 2013; Lewis, 2000; Poole & Van de Ven, 1989). In an early typology, Poole and Van de Ven (1989) proposed four approaches to paradox – opposition, spatial separation, temporal separation, and synthesis. Opposition, now more often termed 'acceptance', denotes "accepting the paradox and learning to live with it" (p. 566). Subsequent studies propose strategies for 'living with' paradox. For example, Lüscher and Lewis (2008) found that middle managers could more effectively live with the tensions between stability and change by adopting practices of paradoxical inquiry – asking themselves how they could address both elements

simultaneously. Doing so allowed them to find a 'workable certainty', a strategy for moving forward, rather than getting stuck in the face of the paradoxical tensions.

Spatial separation delineates levels of analysis to segregate competing yet co-existing demands, processes, and perspectives (Poole & Van de Ven, 1989). Studies of collective approaches further elaborate this structural strategy. For example, Bradach (1997) found that tensions between a firm's need for internal alignment and market pressures for adaptation can be managed by separating the associated tasks into different operating units. Some studies of ambidexterity, subsequently labeled 'structural ambidexterity,' similarly assigned exploration and exploitation efforts to distinct organizational units (Tushman & O'Reilly, 1996; Tushman, Smith, Wood, Westerman, & O'Reilly, 2010). Such structural separation can help minimize conflict and avoid inertia, but can also create power imbalances, where one pole begins to dominate. As studies of corporate responsibility illustrate, structurally disaggregating ethics and social responsibility from the rest of the organization, such as within a philanthropic-focused unit, can minimize their influence on strategic decision making (Weaver, Trevino, & Cochran, 1999).

Temporal separation allocates competing demands to sequential time periods. Early studies of exploration-exploitation tensions, including March's (1991) initial conceptualization, advocate for a temporary focus on one then another pole, depending on current demands for efficiency and incremental innovation versus change and radical innovation (Tushman & Romanelli, 1985). Similarly, Chung and Beamish (2010) describe temporal separation between cooperation and competition in joint ventures facing multiple ownership changes. For these studies, transition periods become critical to effectively managing shifts between competing demands. In a quantitative, longitudinal event study, Klarner and Raisch (2013) showed empirically how organizations balance the opposing forces of change and stability through a sequential approach that enables purposeful, yet rhythmic shifts between periods.

Finally, synthesis involves identifying a novel solution that takes both paradoxical elements into account. In a case study of two Toyota model changeovers, Adler et al. (1999) provided a rich description of a combination of multiple strategies to accommodate the dual forces of flexibility and efficiency. Similarly, Schmitt and Raisch (2013) presented an integrative approach to retrenchment and recovery activities throughout corporate turnarounds.

Other studies depict how approaches to managing competing demands over time involve a combination of these various strategies. For example, Smith and Lewis (2011) proposed a dynamic equilibrium model of managing paradox, which involves accepting paradoxical tensions in the long term, while in the short term either finding synergies between competing demands and/or providing oscillating support between elements. Smith (2014) found that top management teams effectively managed exploration and exploitation over time through dynamic decision making. The top management teams adopted and combined practices of differentiating – pulling apart the poles to amplify their valued distinctions – and integrating – accentuating their linkages to leverage synergies. Doing so allowed them to frequently oscillate support between the existing product and the innovation, such that both flourished simultaneously. In a comparative case study, Andriopoulos and Lewis (2009) found that new product design firms explore and exploit through differentiation practices such as diversifying product portfolios, iterating between project constraints and freedom, and separating work modes and integration practices such as cultivating a paradoxical vision, purposefully improvising, and socializing employees.

More recently, in a one-year ethnography on work practices, Smets et al. (2015) detailed how reinsurance traders face tensions between market and community logics. Differentiating involved segmenting spaces, times, and practices to address each logic, while integrating efforts, such as collaborative spaces and strategic problem solving, serve as a bridge so logics may inform and enable each another. In a longitudinal study, Raisch and Tushman (2016) further

show how exploratory units within established organizations initially pursue parent alignment (integration with their corporate parent; differentiation from their peer units), but subsequently shift to peer alignment (integration with their peer units; differentiation from their corporate parent) when they transition to scale. The differentiation-integration tensions are thus partly nested across time and partly nested across space. This combined work stresses both differentiating and integration as critical and mutually enforcing elements to effectively embrace paradox. Differentiating alone could fuel intractable conflict between poles, while integrating in isolation could surface false synergies, cause inertia, and result in organizational decline.

Approach: Individual. Studies of individual approaches examine organizational actors' cognitive, emotional, and behavioral reactions to paradox. Even as paradoxical insights derive strongly from psychoanalysis, which focuses on how individuals experience and react to paradox, management studies have remained relatively silent about individual approaches. In our review, only 40 studies (or 30%) investigate micro-level responses to paradox.

Studies that explore individual approaches focus particularly on leaders as the key actors engaging in paradox management, including senior leaders (Smith, 2014; Smith & Tushman, 2005), general managers (Fiol, 2002), and middle managers (Huy, 2002; Leonard-Barton, 1992; Lüscher & Lewis, 2008). As an example, Zhang et al. (2015) found that Chinese leaders who demonstrate comfort when facing contradictory demands, foster greater adaptability, proficiency, and proactivity among their subordinates.

As posited by early psychology scholars, paradoxical tensions can spark myriad responses, potentially constructive or destructive. On the negative side, paradoxes foster anxiety, uncertainty, and ambiguity, leaving individuals feeling threatened and defensive (Schneider, 1990). Paradox scholars often describe the impact of individual defense mechanisms on context of broader organizational approaches (Lewis, 2000; Vince & Broussine, 1996). For example,

Leonard-Barton (1992) studied paradoxes of new product development, where core capabilities for an existing product become core rigidities for new products. She found that managers' defensive reactions could undermine development projects, as they would abandon the new capabilities, reorient these capabilities to a different purpose, or revert back to existing capabilities. Further, paradoxes can lead to frustration (Kahn, 1990). In a longitudinal ethnographic study on a natural food cooperative, Ashforth and Reingen (2014) found that the experience of discomfort can spur individuals to apply splitting and projecting defenses, thereby creating in-groups and out-groups within an organization.

Other studies explicate responses that enable individuals to embrace, and even thrive with paradox. For example, research suggests the potential power of paradoxical thinking. As found in early studies of creative geniuses (Schneider, 1990), actors may reframe paradoxical tensions, questioning either/or assumptions to explore contradictions and their interdependence, and consider both/and alternatives (see Bartunek, 1988). Moreover, Jay's (2013) study of the Cambridge Energy Alliance examined how its leaders managed dual strategic goals. Reframing the relationship between their social mission and financial needs as paradoxical, leaders found creative means of meeting both demands and benefitted from their interplay.

Management studies have also begun to identify individual capabilities associated with greater ability to engage paradoxes. In particular, scholars describe cognitive abilities such as paradoxical thinking (Miron-Spektor, Gino, et al., 2011; Smith & Tushman, 2005; Westenholz, 1993), integrative complexity (Suedfeld, Tetlock, & Streufert, 1992), and the ability to conceptualize across temporal dimensions (Huy, 2001). More behavioral capabilities include behavioral complexity (Denison et al., 1995) and behavioral integration (Carmeli & Halevi, 2009). In a study of middle managers, Hatch (1997) finds that individuals may better cope with paradox through ironic humor, surfacing tensions by accentuating contradictions. Still other

studies explore how discourse surfaces paradoxical tensions and informs responses to them (Putnam, 2015; Putnam & Fairhurst, 2014; see also Putnam and colleagues in this issue for more in-depth insight into the role discourse in engaging paradoxes).

Studies have also explored how cultural background informs individual paradoxical responses. Early philosophical writings depict Eastern thinking as emphasizing harmony and seeking to identity a 'middle way,' while Western thinking stresses distinctions, contradiction, and opposition (Chen, 2002; Chen & Miller, 2011). At the individual level, scholars suggest that such national culture informs individual thinking (Keller & Loewenstein, 2011; Peng & Nisbett, 1999), and shifts leadership behaviors (Zhang et al., 2015). Organizational studies stress integrative thinking as a hallmark of several Eastern organizations, such as Toyota (Adler et al., 1999; Eisenhardt & Westcott, 1988).

Insert Table 3 about here

Impact: Outcomes. Despite the persistent nature of paradoxes, studies relatively often examine specific consequences of paradox and its (mis)management, as seen in 48 of the analyzed studies (36%). On the negative side, studies found that defensive individual or collective responses, pulling toward one extreme or avoiding engagement with paradox, can have undesired consequences (Bartunek, Walsh, & Lacey, 2000), fostering ambivalence (Ashforth, Rogers, Pratt, & Pradies, 2014), and causing chaos (Thiétart & Forgues, 1995). If not managed effectively, paradoxical forces can neutralize each other's beneficial side (Gebert et al., 2010) or spark conflict (Chung & Beamish, 2010). For instance, subgroups that identify with alternative poles can become polarized, enmeshed in intractable we/they turf wars (Fiol, Pratt, & O'Connor, 2009; Glynn, 2000). Over time, such mismanagement can lead to organizational decline

(Sundaramurthy & Lewis, 2003). In a case study on an IT venture, Drummond (1998) showed that ignoring one side of a paradox ultimately leads to the collapse of the venture.

Alternatively, engaging paradox effectively can be a means to fostering virtuous cycles (Smith & Lewis, 2011). The benefits of working through, rather than against paradox include enabling innovation (Gebert et al., 2010) or ambidexterity (Raisch & Birkinshaw, 2008). In an experimental laboratory study, Miron-Spektor, Gino, et al. (2011) demonstrated how engaging in paradoxical tensions fosters creativity. Tapping the positive potential of paradox to leverage contradictions and their independence can also increase effectiveness of teams (Drach-Zahavy & Freund, 2007) and individual managers (Denison et al., 1995). Studies frequently depict organizational sustainability or superior long-term performance as firms become increasingly adept at meeting the persistent competing yet complementary demands over time (Chung & Beamish, 2010; Schmitt & Raisch, 2013; Smith, Lewis, & Tushman, 2011).

Impact: Dynamics. As paradox persists, the interplay between its contradictory and interdependent elements consistently shifts, intensifying tensions and/or opening new possibilities, and triggering responses in an ongoing, iterative process. Studies of paradox dynamics offer a valuable process perspective, providing insights into continuous change (Langley, 2007), and the vicious or virtuous cycles over time (Smith & Lewis, 2011). Yet despite the importance of this theme, only 24 of the analyzed studies (18%) investigate dynamics of paradox.

As noted earlier, paradoxes persist over time, but they often remain latent until contextual conditions of plurality, change, and scarcity and/or processes of social construction raise actors' awareness (Smith & Lewis, 2011). For example, multiple stakeholders with diverse goals can spur dynamics when a given stakeholder stresses one element, provoking equally emphatic, defensive reactions by another stakeholder preferring the opposing element (Fiol et al., 2009).

Besharov's (2014) study of a natural food supermarket demonstrates how the organization's commitment to both a social mission and business purpose created tensions, which surfaced through conflicts between parties advocating for either side. Changes in firm ownership (Chung & Beamish, 2010) or internal firm processes (Boiral, 2007) can also fuel dynamics by juxtaposing conflicting goals, priorities, and practices. Moreover, scarcity can trigger resource allocation challenges between contradictory yet co-existing needs (e.g., financial, temporal, and human) (Smith, 2014). Finally, studies also examine the role of discourse in surfacing latent tensions (Chreim, 2005; Fairhurst & Putnam, 2014; Hatch, 1997; Putnam, 1986, 2015). For instance, Voyer (1994) highlighted managers' actively raising questions about power tensions amidst a change effort, exploring how increased power led to decreased power and vice versa.

Mapping a process of paradoxical inquiry, Lüscher and Lewis (2008) depicted changes in understanding as managers articulated, questioned, and reflected upon shifting paradoxes. Likewise, research depicts paradoxes unfolding in cyclical (e.g., Langley, 2007) and dialectical (e.g., Harvey, 2014) processes. Building from the foundational work of Smith and Berg (1987), conceptual studies further elaborated on the dynamics of vicious and virtuous cycles (e.g., Smith & Lewis, 2011; Sundaramurthy & Lewis, 2003).

Insert Table 4 about here

THE NEXT 25 YEARS OF PARADOX RESEARCH

Our analysis suggests that paradox research in management science is at a critical junction. The past 25 years reveal an emphasis on studying types, collective approaches, and outcomes.

This straightforward agenda appears to apply a linear epistemology to paradoxical phenomena, as it identifies a problem, proposes organizational responses, and examines consequences. Yet vital themes of relationships, individual approaches, and dynamics highlight the non-linear nature of paradox, as they involve inextricable links and cyclical interactions. These themes extend the richness of the lens, but are also more challenging to address (Lewis, 2000).

Theory building demands a balance between simplicity – seeking to address insight with greatest parsimony possible (i.e., 'Ockham's Razor') – and complexity – ensuring requisite variety to align with the nature of the phenomena (Ashby, 1956). Paradox studies have moved toward an evolution of increased simplification, potentially missing critical insights. For example, neglecting the dynamics of paradox could overlook the persistence of tensions, and associated virtuous or vicious cycles (Smith & Lewis, 2011). Many of these rich, complex ideas are embedded in foundational insights of such scholars as Confucius and Hegel to Freud and Jung. These ideas informed early management scholars, such as Mary Parker Follet, who, in the 1920's, wrote about circularity, dynamism, and simultaneity of opposing forces (Graham, 1995). Contemporary paradox scholars, however, have paid less attention to these ideas.

In this section, we propose a future agenda for a paradox meta-theory that draws from foundational insights to extend the under-researched themes – relationships, individual approaches, and dynamics. We return to early philosophy and psychology to identify key meta-theoretical principles and illustrate their application to various management domains.

Elaborating Paradoxical Relationships

Foundational work in philosophy and psychology conceptualized the interdependent relationship of paradoxical elements. Three principles pervade these studies: (1) unity of opposites, (2) concept of balance, and (3) principle of holism. We briefly present the foundations

for each of these meta-theoretical principles, and then cite pioneering studies in the management domain, from which we develop a future research agenda.

Unity of opposites. Ancient philosophers such as Buddha, Confucius, and Plato, argued that paradoxes are opposed in perception, but exist as a unified whole (Rothenberg, 1979). In Chinese philosophy, the symbol of yin and yang refers to such interconnectedness where movement on one side critically impacts the other (Hampden-Turner, 1981). These insights emphasize that things cannot exist without their counterpart. For example, Thomas Aquinas stated: "for if all evil were prevented, much good would be absent from the universe" (Q22, A2). Similarly, the French philosopher Derrida (1972) argued that we cannot conceive of 'good' if we do not consider 'evil.' Unity of opposites underlies dialectics (Hegel, 1812/1998), as thesis and antithesis are mutually constituted (Girardot, 1988). In psychology, Jung (1924) characterized personality as comprised by an integration of consciousness and unconsciousness.

Recent management studies illustrate the value and potential of this principle. Such works conceptualize interdependent contradictions as dualities – stressing their mutually constituted nature (Farjoun, 2010). Despite the underlying opposition, "an absolute reconciliation is unwarranted and counterproductive" (Graetz & Smith, 2008, p. 277). Taking a duality perspective, Schmitt and Raisch (2013) recently argued that an approach to corporate turnarounds which integrates both retrenchment and recovery activities, fuels higher performance than more usual, sequential approaches. We propose *unity of opposites* as a meta-theoretical principle of paradox research dealing with the interrelatedness or interdependence of opposing elements.

Focusing on the wholeness across contradictory elements raises future research questions. What drivers facilitate greater appreciation of paradoxical interdependence? How might this mutually constituted relationship inform and enhance approaches to paradox? Future research could build upon existing insights to enrich understandings of such interdependence, its drivers

and outcomes, as well as alternative strategies to engage paradox. For example, unity of opposites could help corporate social responsibility scholars reconceptualize economic value and social value to understand the inherent integration between financial and social demands (e.g., Margolis & Walsh, 2003). Approaching these value concepts as interdependent may suggest integrative managerial means to achieve 'shared value' (Porter & Kramer, 2011) or 'synergistic growth' (Zimmermann, Gomez, Probst, & Raisch, 2014). Similarly, such a perspective could aid research on social enterprises (Dacin, Dacin, & Tracey, 2011) and the management of tensions between social missions and business ventures (Jay, 2013; Smith et al., 2013). Moreover, unity of opposites may inform competitive strategy research (Porter, 1980) to explore the potential synergies and relationship between cost leadership and differentiation strategies. Doing so might elucidate synergistic approaches such as 'blue ocean strategies' (Kim & Mauborgne, 2005).

Concept of balance. If paradoxical tensions are persistent, balancing opposing poles is an ongoing concern. Balance however rarely emphasizes a static state, but rather a dynamic process. The 'doctrine of the mean' emerges in both Eastern and Western thinking. In *Nicomachean Ethics,* Aristotle (trans. 1962) suggested that balance refers to striving for a 'golden mean' between extremes. Likewise, Confucius (1977) introduced the doctrine of the mean to achieve harmony by avoiding extremes. Conversely, Hegel (1812/1998) borrows from Socratic and Kantian philosophy to present dialectics as an alternative path to balance. As previously defined, dialectics is an interpretative method in which a proposition (thesis) is opposed by its contradiction (antithesis), and resolved by transcending the opposites (synthesis).

Recent studies in management acknowledge the importance of balancing as a means of addressing tensions (Sutherland & Smith, 2011). In these cases, balance is neither static, nor does it suggest a consistent equal weighting of alternative perspectives. Rather, this approach involves an ongoing dynamic interaction. The image of tightrope walkers depicts such dynamic balancing;

their stability on the thin rope depends on consistent, ongoing microshifts. Smith and Lewis (2011) propose a dynamic equilibrium model, which invokes such "constant motion across opposing forces" (p. 386). This dynamism involves iteratively shifting attention between alternative demands (Kim, McInerney, & Sikula, 2004), adopting complex and fluid managerial approaches (Cao, Gedajlovic, & Zhang, 2009), and being consistently inconsistent in decision making (Smith, 2014). Carlo et al.'s (2012) empirical study of a building project by renowned architect Frank O. Gehry illustrates such a deliberate process: project members ensured organizational reliability by continuously alternating between mindful and mindless behaviors. Moreover, Smith (2014) describes senior leaders engaged in dynamic decision making – fluidly and flexibly shifting support between alternative strategies. Other scholars transcend stability-flexibility tensions by accentuating bureaucracies' 'enabling' elements, while avoiding their 'coercive' elements (Adler & Borys, 1996; Osono, Shimizu, & Takeuchi, 2008). Briscoe (2007) shows how greater bureaucracy can create more flexibility for professional service workers.

We thus propose the meta-theoretical *concept of balance* to address contradictory, but interdependent elements. Informed by this concept, future research can explore issues, such as the conditions under which achieving a 'golden mean' (Aristotle, trans. 1962), transcending opposites (Hegel, 1812/1998), or oscillating between contradictory poles can be most effective. Is there a temporary balance (a punctuated equilibrium) between opposing elements (Sutherland & Smith, 2011) or a dynamic equilibrium involving constant shifting (Smith & Lewis, 2011)? Future research could explore in greater detail how individuals effectively live within a dynamic state of balance. For example, research on team effectiveness (Cohen & Bailey, 1997) emphasizes inconsistent research findings that suggest both positive and negative effects of team characteristics and processes such as diversity (Horwitz & Horwitz, 2007), conflict (De Dreu, 2006), and goal setting (Locke & Latham, 1990). Defining the opposites more clearly might

elucidate their positive and negative effects, helping identify a temporary balance through a 'golden mean' or exploring possibilities of transcendence that accentuate the positive, while avoiding the negative effects. Further, research on knowledge transfer often notes a tension between making knowledge transferable while keeping it inimitable to competitors (Kogut & Zander, 1992). The concept of balance accentuates the need to examine coping mechanisms that help transfer knowledge while simultaneously creating barriers to imitation.

Principle of holism. According to Hegel (1807/1977), systems function as wholes and cannot be understood by only examining their parts. Aristotle refers to holism in his book 'Metaphysics', which became famously known as "the whole is more than the sum of its parts" (Von Bertalanffy, 1972, p. 408). In an influential essay, analytic philosopher Quine (1951) turns against 'two dogmas of empiricism' – the analytic-synthetic distinction and reductionism. For Quine (1951), "The unit of empirical significance is the whole of science" (p. 39). Similarly, researchers point to the holism between materiality and discourse, suggesting that the two are inseparable (i.e., Orlikowski & Scott, 2015).

Issues of holism become even more complicated when we consider that organizations usually face multiple, nested paradoxes simultaneously (Smith & Lewis, 2011). Addressing paradoxes individually might cause ripple effects, potentially sparking further tensions, and thus lead to inferior strategies. What is required are more integrative or holistic approaches (Bloodgood & Chae, 2010). In a longitudinal case study, Jarzabkowski et al. (2013) offer a process model of how managers cope with interwoven tensions during a corporate restructuring initiative. In this vein, the *principle of holism* serves as a third meta-theoretical principle, accentuating the systemic interrelatedness of multiple organizational paradoxes.

This tenet suggests provocative questions for future research, such as: How do nested paradoxes interact with one another? And how do approaches to one paradox affect dealings with

other, related paradoxes? How would our management theories shift if they embedded insight about holism across various oppositional forces? For example, stakeholder theory (Freeman, 1984; Parmar et al., 2010) recognizes multiple stakeholders with vested, often conflicting interests in organizations. To what degree do performing paradoxes (strategic priorities that reflect competing demands) reinforce or mitigate organizing paradoxes (practices for control and flexibility) fueled by their implementation? Should different stakeholder groups be treated individually or could a holistic approach foster greater synergy? Moreover, applying the principle of holism to paradoxical tensions in strategic alliances (Doz & Hamel, 1998) could help explore interrelations among multiple conflicting forces, such as cooperation and competition, rigidity and flexibility, and short-term and long-term orientations (Das & Teng, 2000).

Individual Approaches: Leveraging the Microfoundations of Paradox

Early psychology research generated insights into the microfoundations of paradox, examining individuals' reactions to paradox and their capacity to think paradoxically. Moreover, scholars from diverse backgrounds examined how individual-level factors such as cognitions, motivations, and preferences might aggregate to higher levels. Drawing on this work, we identify three meta-theoretical principles for the microfoundations of paradox research: (1) anxiety and defense mechanisms, (2) paradoxical thinking, and (3) social aggregation.

Anxiety and defense mechanisms. Freudian psychology posits that paradoxes generate anxiety, sparking defenses that reduce stress temporarily, but impede more productive and sustainable approaches (Schneider, 1990). Building on her father's work, Anna Freud (1937) detailed ten defense mechanisms including repression, isolation, and projection. Festinger (1957) similarly found that individuals strive for consistency in their cognitions. Since inconsistencies cause discomfort, actors attempt to avoid them. Frankl (1975) posed 'paradoxical intention' as a

therapeutic means to escape vicious cycles of anxiety and defensiveness, encouraging actors "to do, or wish to happen, the very things [they] fear" (p. 227).

Some management studies of paradox tap into these psychological insights. Smith and Berg (1987) acknowledged that organizational actors employ defense mechanisms to cope with paradoxical tensions, but fuel vicious cycles through attempts to maintain reduced anxiety levels. In their empirical study of six public service organizations, Vince and Broussine (1996) explored emotions, cognitions, and behaviors during a change process. Their findings explicate how tensions create paradoxical emotions – such as simultaneous optimism and pessimism – that prompt counterproductive defenses. Building on these earlier studies, Lewis (2000) catalogued six defensive reactions: 1) splitting elements to emphasize their contradictions, 2) projecting the anxiety to a third party, 3) repressing the tensions, 4) regressing to more secure actions or understandings, 5) reaction forming, or cultivating an oppositional action or belief, and 6) ambivalence, which involves compromising to engage both alternatives with "'lukewarm' reactions that lose the vitality of extremes" (p. 763). Building on this work, the meta-theoretical principle of *anxiety and defense mechanisms* could inform studies of individual-level reactions to organizational tensions and their management.

These ideas suggest research questions at the microfoundations of paradox exploring how individual emotions, cognitions, and behaviors interact to influence responses to paradox. What is the role of cognition and behavior in creating or avoiding anxiety? Are such individual defenses contagious; do they impact collective, organization-level defenses, such as strategic persistence? For example, a microfoundations perspective of paradox could inform management research on cognitive dissonance (Bacharach, Bamberger, & Sonnenstuhl, 1996), highlighting how tensions might create or reinforce cognitive inconsistencies across the individual, team, and firm levels. Furthermore, paradox microfoundations could stimulate new insights in ethical decision-making

research. While this literature is fraught with tensions, studies of unintended outcomes (Tenbrunsel & Smith-Crowe, 2008) are scarce. A paradox lens could help investigate how anxiety and defense mechanisms can cause good intentions to result in undesired outcomes. Of particular note is the role of emotions in paradox. Early studies highlight emotions as critical in surfacing and thwarting paradox, but we still know relatively little about the variations of their role. Future research could explore in more detail how emotions surface paradoxes, and how they inform our responses. Research can also offer more in depth insight about the interactions of emotions and cognition to address paradoxes (Voronov & Vince, 2012).

Paradoxical thinking. Addressing tensions and breaking out of vicious cycles requires paradoxical thinking to critically examine and alter entrenched either/or assumptions, and thereby construct a more accommodating understanding of opposites (Watzlawick, Weakland, & Fisch, 1974). In his work on creative achievements, Rothenberg (1979) introduced 'Janusian thinking' as the capacity to transcend contradictions. More recently, the ability to think paradoxically has been related to cognitive flexibility, defined as the ability to cognitively control and shift between divergent mental sets (Good & Michel, 2013).

While tensions can trigger defensive responses, management scholars have argued that actors with cognitive complexity (Smith & Tushman, 2005), behavioral complexity (Denison et al., 1995), and emotional equanimity (Smith & Lewis, 2011) are more likely to accept and embrace paradox. For example, Eisenhardt and Westcott (1988) depicted how Toyota leaders first juxtaposed and then reframed competing demands to rethink the quality-efficiency tension. Moving from a tradeoff to a paradox mindset enabled them to develop just-in-time processes that revolutionized the auto industry. Further, Westenholz (1993) observed that some employees in a producers' cooperative responded to tensions with paradoxical thinking, which challenged their existing mental models. In a conceptual paper, Hahn et al. (2014) contrasted two cognitive frames

in managerial sensemaking – a paradoxical frame and a business case frame – to address corporate sustainability tensions. They showed how the different assumptions underlying each frame influenced divergent decision-making processes. *Paradoxical thinking* thus offers an important meta-theoretical principle dealing with individual cognitions that engage paradox.

Diving further into the interplay between cognition and paradox, related questions swirl around individual differences and the role of organizational context. For example, how and why do individuals differ in their propensity for paradoxical thinking? Likewise, how do organizational conditions – practices, structures, leadership styles, etc. – influence individual and collective applications of paradoxical thinking? For example, these microfoundations of paradox could enrich crisis management research. While crisis studies typically frame crises as threats, this negative frame neglects the role of positive leadership to reap opportunities (James, Wooten, & Dushek, 2011). In contrast, paradoxical thinking might help leaders frame crises as both threats and opportunities to explore more creative responses. Further, micro-level studies could explore how individual employees use paradoxical thinking in their everyday work. Besharov (2014) found that individuals with the ability to engage paradox often rise to levels of management, facilitating tensions that may emerge among others with strong commitments to one side or another. This finding raises issues of whether paradoxical thinking is an embedded trait, or something that can be taught and learned over time. If paradoxical thinking can be taught, we need to clarify what might be some of the best ways to do so (see Smith et al., 2012).

Finally, extant studies suggest that Eastern and Western cultures inform distinct approaches to paradox. Following their different philosophical traditions, Eastern thinkers might stress more interdependence, middle way, and harmony, while Western thinkers might stress more contradictions, conflict, and tensions (Chen, 2002; Keller & Loewenstein, 2011). Since this distinction might be oversimplified (P. P. Li, 2014; X. Li, 2014), future research could move

beyond such stereotypical descriptions. In particular, as our world becomes more global and cultures increasingly inform one another (Molinsky, 2007), future research may clarify also whether these approaches are becoming less distinct from one another.

Social aggregation. Paradoxes span across levels of analysis, where tensions exist and are created between these levels. Social psychologists describe how micro-level factors, such as actors' cognitions, motivations, and perceptions, become aggregated as multiple actors cope with tensions (Bartunek, 1988; Sewell, 1989). Yet aggregation is complicated, far from the simple sum of individual preferences, as tensions emerge through social processes. Questions of how individual preferences aggregate to higher levels, have attracted attention by several fields in philosophy. Arrow (1951) referred to social choice theory to demonstrate that it is impossible to aggregate ranked individual preferences into an outcome meeting minimum criteria of fairness – tensions are rooted in the process of aggregation. The topic of social aggregation is also relevant in social contract theory, where an idea of man determines the aggregated outcome. Thomas Hobbes (1651/1981), for instance, formulated a classic worst-case scenario of a war 'of every man, against every man,' resulting in the need for a powerful leader (the Leviathan) to maintain social order. John Rawls (1971) on the contrary emphasized the process of aggregation to result in a fairness-based society through distributive justice decided behind a 'veil of ignorance'.

In management science, the emerging microfoundations literature (Devinney, 2013) grapples with the social aggregation of individual actions towards higher organizational levels (Felin, Foss, & Ployhart, 2015). In fact, some proponents state that "social aggregation […] should be at the very core of any microfoundations discussion" (Barney & Felin, 2013, p. 138). In the paradox literature, Sundaramurthy and Lewis (2003) show how reinforcing cycles of groupthink and distrust can aggregate to organizational decline. Further, scholars have studied paradox at nested levels, as the ultimate challenge lies in tensions experienced *across* levels –

simply addressing a tension at one level may only spur new challenges at another level (Raisch & Birkinshaw, 2008; Smith & Lewis, 2011). For example, Fiol (2002) developed an aggregate model of identity transformation. Examining paradoxical needs for a highly identified and a less highly identified workforce during organizational change, she examined processes through which individual identity and organizational identity interact. Such work illustrates the value of *social aggregation* as a meta-theoretical principle, addressing the micro-level foundations for organizational-level tensions and the interplay of paradoxes across levels.

The multi-level nature of paradox with regard to its microfoundations raises vital research questions: How do individual approaches to paradox aggregate to higher-level organizational responses? How does aggregation actually work, particularly given the potential for social interactions to surface new, interwoven tensions? For example, studies of institutional logics grapple with intricate organizational tensions, but often neglect the role of agency (Besharov & Smith, 2014). A paradox lens could aid investigations into how individual, organizational, and field-level factors interact and impact competing institutional logics. Likewise, studies on the resource-based view and paradox (Lado, Boyd, Wright, & Kroll, 2006) and on the resource-based view and microfoundations (Foss, 2011), are potential starting points for future research exploring how individual-level cognition affects capability development (Eggers & Kaplan, 2013) and how firms address the involved tensions across levels. Such work could explicate the micro-level origins of paradox, as well as their aggregated effects across organizational levels.

Dynamics: Examining the Persistence of Paradox through a Process Perspective

Explicating the persistence of paradox, dynamics, such as vicious and virtuous cycles, double binds, stuckness and change, have long been explored in philosophy and psychology. Drawing on this prior work, as well as pioneering studies in management, we identify a final set of meta-theoretical principles to enable a process perspective on paradox: (1) complexity and

adaptive systems, (2) dialectical process, and (3) identity and change. In this *Academy of Management Annals* issue, Putnam and colleagues also provide starting points for research on contradictions taking a process perspective.

Complexity and adaptive systems. Complexity science is concerned with the dynamic properties of nonlinear feedback systems (Waldrop, 1992). Small adaptations can ripple throughout such systems, sparking unforeseeable outcomes. Systems are complex and operate far from equilibrium: they are driven by negative and positive feedback to paradoxical states (Cilliers, 1998). Traditional approaches – providing the basis of management science – focus on how to steer and regulate such systems (Wiener, 1948). Alternatively, scholars advocated 'spontaneous order' and 'self-organization' leading to superior solutions (e.g., Hayek, 1982).

Despite early management calls to examine the dynamics of paradox (Lewis, 2000; Smith & Berg, 1987), there are limited studies that explore complex and changing systems. In a rare exception, Stacey (1995) argued that organizational attempts to address tensions can cause negative and positive feedback cycles. Examining negative feedback cycles more closely, Sundaramurthy and Lewis (2003) concluded: "Stressing one polarity exacerbates the need for the other, often sparking defenses, impeding learning, and engendering counter-productive reinforcing cycles" (p. 397). Their work shows vicious cycles ensuing from the governance tension between control and collaboration. For instance, excessive collaboration leads to increased consensus seeking, fostering complacency and entrenchment. The cycle persists as such efforts spur even greater collaboration, eventually triggering threat rigidity, groupthink, and organizational decline. In contrast, emphasizing control and suppresses stewardship among leaders, polarizes the board and the managers, invokes myopic behaviors, and ultimately results in distrust and detrimental performance.

Based on these ideas, Smith and Lewis (2011) theorized a dynamic equilibrium model in which embracing and accepting paradox fosters search for novel opportunities, guides iterative, oscillating use of management strategies, and delivers workable certainties to enable learning and motivate even greater engagement with competing demands. Grounded in a field study, Jay (2013) describes how organizational members' attempts to make sense of paradoxical demands led to oscillations between and finally combining conflicting private and public institutional logics. This process enabled members to generate novel solutions to climate change. Drawing on this combined work, we propose *complexity and adaptive systems* as a meta-theoretical principle to explore the dynamics of paradox from a process perspective.

This principle raises intriguing future research questions regarding paradox within dynamic systems: How can organizations and their managers sustain a dynamic equilibrium? What processes of system adaptation can be observed through paradox management? Future research could expand our understandings by exploring the timing, frequency, and nature of dynamics (Klarner & Raisch, 2013). For example, a process perspective of paradox could help explore how team dynamics (Cronin, Weingart, & Todorova, 2011) spur positive and negative feedback cycles, which foster or harm effectiveness at different stages of team development. Further, while prior ambidexterity research has primarily examined collective approaches to balance exploration and exploitation (O'Reilly & Tushman, 2013), a process perspective could explicate how organizations shift this balance over time with changing requirements.

Dialectical process. Hegel (1812/1998) argued that tensions drive change: "Contradiction is the determination of all movement and vitality; it is only in so far as something has a contradiction within it that it moves, has an urge and activity" (p. 439). Based on Hegelian dialectics, contradictions are resolved through synthesis, but every synthesis constitutes a new thesis that is eventually opposed by a new antithesis. Subsequently, a yet higher synthesis occurs

and the dialectical process continues. For Hegel, this process is not purely iterative, but teleological – every newly emerging tension builds on the past. Conversely, Engels (trans. 1946) described the systemic disruptions of this dialectic process.

Managerial research has started to explore how organizations shift between one-sided and dual attention to opposing forces, such as exploration and exploitation (Boumgarden, Nickerson, & Zenger, 2012; Zimmermann, Raisch, & Birkinshaw, 2015). Permanent modulation implies the risk of path dependencies (Wang & Li, 2008), but can also enable learning that allows for reconciling tensions (Bloodgood & Chae, 2010). Harvey (2014) illustrates such a dialectical process in group creativity: a synthesis of group members' diverse perspectives into a creative 'breakthrough idea' is also a new 'enacting idea' that becomes the starting point of a new synthetic process. We thus propose *dialectical process* as a meta-theoretical principle dealing with processes of synthesis, shifts, and disruptions.

Dialectical insights suggest several future research questions: When and how do organizations shift between alternative paradox strategies? What capabilities are needed to achieve synthesis? What factors can disrupt the process towards synthesis? For example, inter-firm contracting research (Schepker, Oh, Martynov, & Poppo, 2014) could benefit from dialectics, as contract structure and application must interact to reach a better understanding of tensions that arise from contracts' multiple, contradictory purposes. Moreover, this informed paradox lens might enhance studies of organization design. While there used to be consent that a firm's (internal and external) strategic fit facilitates superior performance (see Miller, 1992), Gulati and Puranam (2009) recently argued that misfit enables strategic renewal, which can positively affect performance. From a dialectical process perspective, superior long-term performance may thus arise from a process of iterations between fit and misfit.

Identity and change. Ancient and modern philosophers such as Socrates, John Locke, and Gottfried Leibnitz have discussed issues of identity and change extensively, often illustrated by the story of the Ship of Theseus. In his book *Theseus,* Plutarch asked whether a ship, which had been restored by replacing each of its parts, was still the same ship. Theseus's paradox has led to important insights into what identity is and how it persists or changes over time. For philosophers such as Aristotle (trans. 1933) and Plato (trans. 1963), reality is a fluid process that never stands still, but they also accentuate that some elements of identity persist over time.

Organizations are fraught with tensions between identity and change (Fiol, 2002), and grappling with multiple, conflicting identities (Pratt & Foreman, 2000; Sillince & Brown, 2009). Management scholars acknowledge that organizational identity can enable or hinder change (Dutton & Dukerich, 1991; Zilber, 2002). Paradox research has highlighted the importance of managing identity-change tensions. In a discursive analysis of a Canadian bank, Chreim (2005) demonstrated how senior managers' evolving narratives simultaneously create continuity and change in the bank's identity by introducing new applications under the umbrella of existing labels. During such identity change processes, managers juxtaposed old and new elements, using both positive and negative connotations. As a meta-theoretical principle, *identity and change* thus addresses tensions between stable and unstable elements of identities and their role in organizational change.

Identity is a central concept in many research domains, and future studies could examine identity-change tensions, asking: How does identity change and persist over time? How do tensions contribute to identity change? Does the frequency and speed of identity changes reinforce these tensions? And how might multiple, conflicting identities be reconciled? Such identity tensions can be explored at multiple levels of analysis. For example, a paradox process perspective is promising for identity scholars (Ladge, Clair, & Greenberg, 2012; Ramarajan &

Reid, 2013; Trefalt, 2013), to explore how tensions between individuals' work and non-work identities and their attempts to reconcile these tensions influence identity formation and change. Further, scholars have argued that such identity formation takes place across levels, for example, individual identities merge into group identity (Ashforth, Rogers, & Corley, 2011). A paradox approach looking at identity and change can help explore conflicting forces during this multi-level process, including the vicious and virtuous cycles they cause.

CONCLUSION: PARADOX AS A META-THEORY AND THEORIZING TOOL

Early philosophers and psychologists offered rich insights into the complexity of paradox. Our review of paradox research in the management domain suggests that we benefit from revisiting these origins to inform our future research. As a meta-theory, such research can span contexts and levels, and more deeply investigate the nature of, approaches to, and impact of organizational paradox. Yet the paradox lens also encourages scholars to *approach organizational paradoxes paradoxically* (Lewis & Smith, 2014). Adhering to the principle of requisite variety (Ashby, 1956), Poole and Van de Ven (1989) stressed the power of paradox as a meta-theorizing tool. Opposing theoretical views may enable vital insights into persistent and interdependent contradictions, fostering richer, more creative, and more relevant theorizing.

From a meta-theory to a meta-theorizing tool, the paradox lens may help scholars apply theoretical views deemed logical in isolation, yet conflicting and problematic when juxtaposed. Lewis and Grimes (1999) advocated a multiparadigm approach, leveraging divergent worldviews to capture paradoxical phenomena. For instance, researchers increasingly accept that paradoxes are both inherent in organizational systems and socially constructed, yet related studies are scarce (Smith & Lewis, 2011). This research focus matches the classic cross-paradigm tension between

objectivity and subjectivity, or structure and action (Poole & Van de Ven, 1989). Rather than applying either/or logic, such questions beg a paradox lens to examine the insights of opposing theories as well as their interplay. For example, accommodating insights from dialectical and structuration theories, the strategy-as-practice literature examines both strategy and strategizing within an iterative, discursive process (Dameron & Torset, 2014).

The paradox lens offers a valued approach to antinomies, or contradictions between equally valid principles, inferences or insights (Quine, 1962). As in the case of organizational paradoxes, theoretical paradoxes remain perplexing, even paralyzing, when researchers are confined by past, either/or assumptions. For Kuhn (1962), such paradoxes represent anomalies, which violate the "paradigm-induced expectations that govern normal science" (pp. 52-53) demanding paradigmatic change. For example, Pierce and Aguinis (2013) demonstrated how seemingly conflicting results may be grounded in an assumption of linear causality, but can be understood by exploring the curvilinear nature of the causal relationship. Similarly, Farjoun (2010) enabled novel insights into organizational tensions by re-conceptualizing stability and change, shifting from disparate, mutually exclusive forces toward an interdependent, mutually enabling duality.

In the social sciences, the temporal and spatial contexts in which phenomena occur affect our understandings of these phenomena. Contrary to the natural sciences, multiple paradigms can thus coexist in the social sciences (Dogan, 2001). Alternative perspectives may accentuate differing, yet interwoven facets of complex phenomena. For example, in his influential study of intricate tensions during the Cuban missile crisis, Allison (1971) applied three paradigm lenses, analyzing the decision-making process from disparate yet complementary perspectives. Similarly, some paradox scholars have linked a paradox perspective and institutional theory to examine competing logics, their interdependence, and dynamics (Jay, 2013; Pache & Santos, 2013). Lewis and Smith (2014) recently positioned the paradox perspective as a timely, 'both/and' alternative

to the ‘if/then’ approach of contingency theory (Lawrence & Lorsch, 1967). Yet even paradox scholars are challenged to think ever more paradoxically, as these dynamics may require both paradox theory and contingency theory approaches. While the paradox lens clarifies tensions and their ongoing management, contingency theory may contribute insights into shifts between the poles or between different strategies, clarifying conditions that might drive such moves.

The articles used in our sample manifest an increasing share of empirical paradox papers, whereby the majority relies on qualitative data. For instance, studies exploring processes of paradoxes unfolding over time or tensions emerging across levels often rely on case studies (Andriopoulos & Lewis, 2009; Denis et al., 2001) or ethnographic studies (Ashforth & Reingen, 2014; Michaud, 2014). Further, scholars use action research to explore paradoxes by actively intervening in the empirical setting (Beech, Burns, de Caestecker, MacIntosh, & MacLean, 2004; Lüscher & Lewis, 2008). Studying paradoxes challenges traditional quantitative methods, which risk to “mask rather than uncover the presence of paradox” (Cameron & Quinn, 1988, p. 15). Pioneering quantitative studies therefore mostly rely on innovative methods, including event studies (Klarner & Raisch, 2013) and experimental research (Miron-Spektor, Gino, et al., 2011). Overall, longitudinal methods – both qualitative (Jarzabkowski et al., 2013) and quantitative (Klarner & Raisch, 2013) – appear to be particularly well-suited for paradox research.

Just as “paradoxes are paradoxical” (Cameron & Quinn, 1988, p. 13), studying paradoxes can be paradoxical as well. Methodological approaches with different underlying assumptions can thus help advance the field of paradox research. For example, Lewis and Smith (2014) suggest promising new quantitative methods such as non-linear approaches (Fiss, 2007) and the analysis of variability (Baum & McKelvey, 2006). Moreover, new qualitative research methods, such as ‘netnography’ (Kozinets, 2002), which allows researchers to tap into the potential of online content, offer novel approaches to study paradoxes. Given its inherent complexity,

paradox research requires the use of sophisticated methods (Smith & Lewis, 2011). Our meta-theoretical principles offer initial guidance regarding the areas of interest and the appropriate methodological choices. For instance, exploring social aggregation may benefit from simulations using agent-based models (Axelrod, 1997), while looking at complexity and adaptive systems might benefit from system dynamics (Sterman, 2000). Some principles might need more basic theory development, whereby a grounded-theory approach could help (Wareham, Fox, & Cano Giner, 2014). Finally, meta-analytical techniques could be used to formally test meta-theoretical principles (Aguinis, Dalton, Bosco, Pierce, & Dalton, 2011).

We hope this comprehensive synthesis of eclectic studies of paradox serves to effectively motivate and inform future research. As we have illustrated, persistent contradictions between interdependent elements are pervasive. They arise within and across management domains, levels, and perspectives. Learning to live and thrive with paradoxes will occur as scholars detail the themes and building blocks of a meta-theory of paradox: the nature of their diverse types and relationships, the value of varied individual and collective approaches, and their impact on differing outcomes and more complex dynamics.

Our in-depth analysis of paradox studies in organizational theories complements the breath of domains analyzed by Putnam and colleagues in this issue, offering paradox scholars rich insights for future theorizing. Such research, however, poses considerable potential and challenges. In *The Paradoxical Self,* Kirk Schneider writes (1990, p. 8):

> More than ever before, I realize how complicated paradoxical functioning can be, how people can become integrated at one level and not another, or within one context but not others, and how much work is necessitated to redress these problematic contexts and levels. I am more convinced than ever, however, that people are beginning to *open to the paradoxical challenge*, that the doctrines of 'either-or' are on the defensive, and that the century ahead will prove our 'litmus test.' (emphasis ours)

We are similarly inspired by the increased opportunity and interest in ‘opening to the paradoxical challenge’ within management theory.

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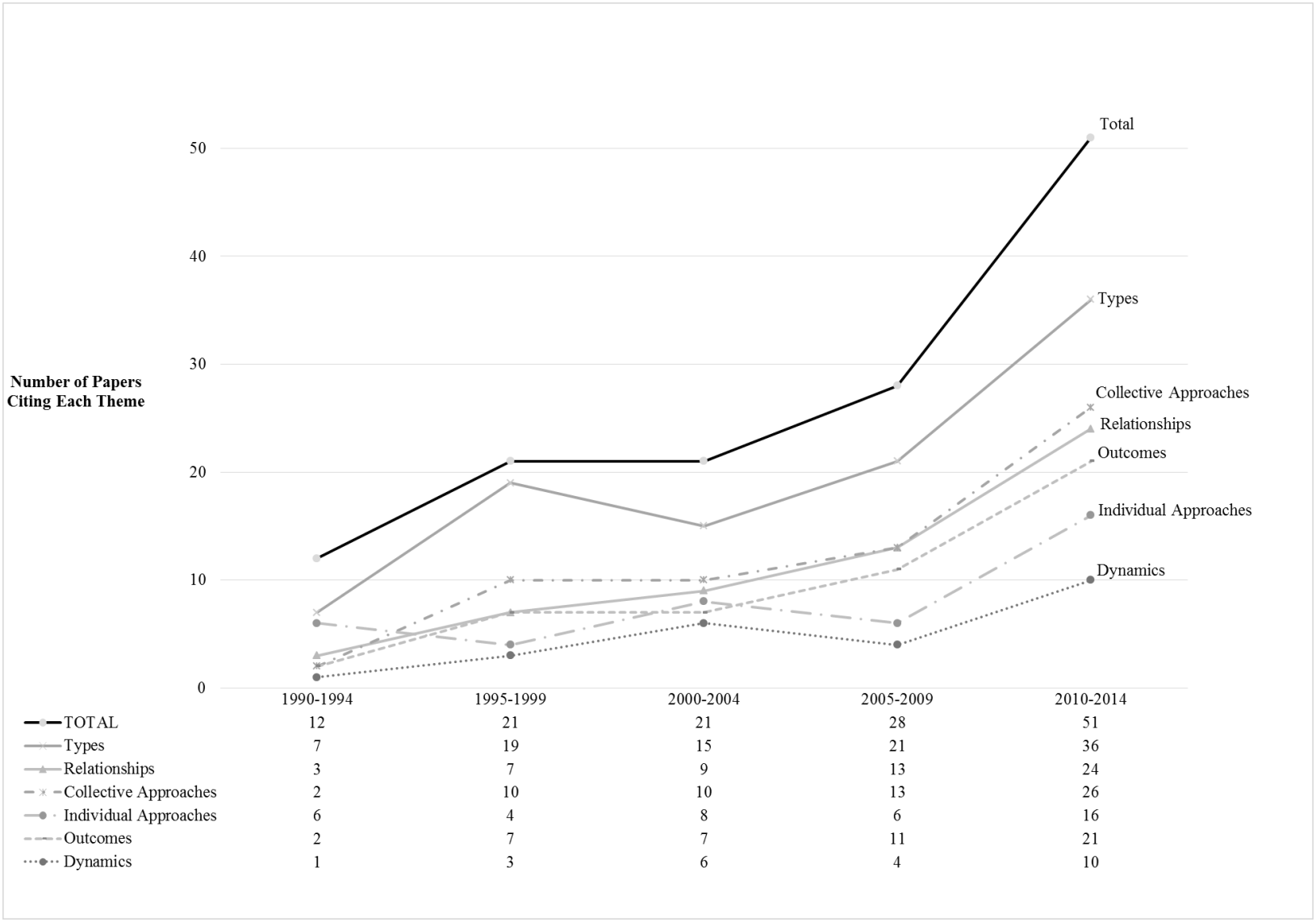
FIGURE 1: Analysis of the Past 25 Years of Paradox Research by Key Theme[2]



[2] Each paper can be categorized with multiple themes. As a result, the 'Total' is not a cumulation of the themes.

FIGURE 2: Categories and Building Blocks of a Paradox Meta-theory

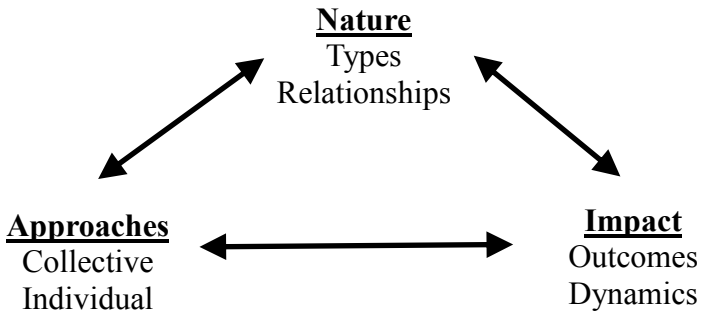


TABLE 1: Paradox Studies (1990-2014) included in Content Analysis

Article	Journal[3]	Empirical/ Theoretical	Theoretical Building Blocks[4]
Kahn (1990)	AMJ	Empirical	IND
Abrahamson (1991)	AMR	Theoretical	TYPE, COL
Murnighan & Conlon (1991)	ASQ	Empirical	TYPE, COL
Orlikowski & Robey (1991)	ISR	Theoretical	TYPE, RLSP
Leonard-Barton (1992)	SMJ	Empirical	TYPE, IND, OUT
Orlikowski (1992)	OS	Theoretical	TYPE, RLSP
Hart & Quinn (1993)	HUM	Empirical	IND, OUT
Hatch & Ehrlich (1993)	OSt	Empirical	IND
Kreiner & Schultz (1993)	OSt	Empirical	TYPE
Westenholz (1993)	OSt	Empirical	IND
Ford & Ford (1994)	AMR	Theoretical	RLSP
Voyer (1994)	OS	Empirical	TYPE, IND, DYN
Denison et al. (1995)	OS	Empirical	TYPE, IND, OUT
Stacey (1995)	SMJ	Theoretical	DYN
Thiétart & Forgues (1995)	OS	Theoretical	TYPE, OUT
Buenger et al. (1996)	OS	Empirical	TYPE, RLSP
Schultz & Hatch (1996)	AMR	Theoretical	TYPE, RLSP
Smith & Zeithaml (1996)	OS	Empirical	TYPE, COL
Vince & Broussine (1996)	OSt	Empirical	IND
Volberda (1996)	OS	Theoretical	TYPE, COL
Bradach (1997)	ASQ	Empirical	TYPE, RLSP, COL, OUT
Hatch (1997)	OS	Empirical	TYPE, IND, DYN
Lado et al. (1997)	AMR	Theoretical	TYPE, RLSP, COL
Drummond (1998)	OSt	Empirical	TYPE, OUT, DYN
Li (1998)	OSt	Empirical	TYPE, RLSP, COL
McKnight et al. (1998)	AMR	Theoretical	TYPE, COL
O'Neill et al. (1998)	AMR	Theoretical	TYPE, COL, OUT
Yan (1998)	JIBS	Theoretical	TYPE, COL, OUT
Adler et al. (1999)	OS	Empirical	TYPE, RLSP, COL, IND
Deephouse (1999)	SMJ	Empirical	TYPE, COL, OUT
Lewis & Grimes (1999)	AMR	Theoretical	TYPE, RLSP
Murray & Kotabe (1999)	SMJ	Empirical	TYPE
Robey & Boudreau (1999)	ISR	Theoretical	TYPE
Bartunek et al. (2000)	OS	Empirical	TYPE, IND, OUT, DYN
Das & Teng (2000)	OS	Theoretical	TYPE, COL, OUT

[3] The abbreviations refer to: Academy of Management Annals (AMA), Academy of Management Journal (AMJ), Academy of Management Learning & Education (AMLE), Academy of Management Perspectives (AMP), Academy of Management Review (AMR), Administrative Science Quarterly (ASQ), Human Relations (HUM), Information Systems Research (ISR), International Journal of Management Reviews (IJMR), Journal of Applied Psychology (JoAP), Journal of Information Technology (JIT), Journal of International Business Studies (JIBS), Journal of Management (JoM), Journal of Management Information Systems (JMIS), Journal of Management Studies (JMS), Journal of Operations Management (JoOM), Journal of Organizational Behavior (JOB), Leadership Quarterly (LQ), Long Range Planning (LRP), Management and Organization Review (MOR), MIS Quarterly (MISQ), Organizational Behavior and Human Decision Processes (OBHDP), Organization Science (OS), Organization Studies (OSt), Research in Organizational Behavior (ROB), Strategic Management Journal (SMJ), Technovation (TECH).

[4] TYPE = Types; RLSP = Relationships; COL = Collective Approaches; IND = Individual Approaches; OUT = Outcomes; DYN = Dynamics.

Lewis (2000)	AMR	Theoretical	TYPE, RLSP, COL, IND, DYN
Pratt & Foreman (2000)	AMR	Theoretical	TYPE, COL
Denis et al. (2001)	AMJ	Empirical	TYPE, COL, IND
Huy (2001)	AMR	Theoretical	COL, IND
Tsoukas & Hatch (2001)	HUM	Theoretical	RLSP
Clegg et al. (2002)	HUM	Theoretical	TYPE, RLSP, DYN
Fiol (2002)	OS	Theoretical	TYPE, IND, DYN
Lewis & Kelemen (2002)	HUM	Theoretical	RLSP
Nickerson & Zenger (2002)	OS	Theoretical	COL
Andriopoulos (2003)	LRP	Empirical	TYPE
Boiral (2003)	OS	Empirical	TYPE, IND
Huxham & Beech (2003)	OSt	Theoretical	TYPE, IND, OUT
Kodama (2003a)	OSt	Empirical	COL, OUT
Kodama (2003b)	TECH	Empirical	COL, OUT
Margolis & Walsh (2003)	ASQ	Theoretical	TYPE, RLSP
Sundaramurthy & Lewis (2003)	AMR	Theoretical	TYPE, RLSP, OUT, DYN
Beech et al. (2004)	HUM	Empirical	TYPE, RLSP, COL
Gibson & Birkinshaw (2004)	AMJ	Empirical	TYPE, RLSP, COL, IND, OUT
Ofori-Dankwa & Julian (2004)	HUM	Theoretical	TYPE, RLSP, DYN
Chreim (2005)	JMS	Empirical	TYPE, RLSP, DYN
Crossan et al. (2005)	AMR	Theoretical	TYPE, RLSP
Lynn (2005)	OSt	Theoretical	TYPE, COL
Schwandt (2005)	AMLE	Theoretical	RLSP
Smith & Tushman (2005)	OS	Theoretical	TYPE, COL, IND, OUT
Whittle (2005)	HUM	Empirical	TYPE, IND
Johnston & Selsky (2006)	OSt	Empirical	RLSP, COL
Lado et al. (2006)	AMR	Theoretical	TYPE, OUT
Sewell & Barker (2006)	AMR	Theoretical	TYPE, RLSP
Boiral (2007)	OS	Empirical	TYPE, DYN
Drach-Zahavy & Freund (2007)	JOB	Empirical	TYPE, COL, OUT
Elsbach & Pratt (2007)	AMA	Theoretical	TYPE
Khazanchi et al. (2007)	JoOM	Empirical	TYPE, RLSP, COL, OUT
Marrone et al. (2007)	AMJ	Empirical	TYPE, COL
Perretti & Negro (2007)	JOB	Empirical	COL, OUT
Vlaar et al. (2007)	OSt	Empirical	TYPE, RLSP, COL
Drummond (2008)	JIT	Empirical	OUT, DYN
Graetz & Smith (2008)	IJMR	Theoretical	TYPE, RLSP
Lado et al. (2008)	SMJ	Empirical	TYPE, RLSP
Li (2008)	MOR	Theoretical	DUA
Lüscher & Lewis (2008)	AMJ	Empirical	TYPE, RLSP, COL, IND, DYN
Raisch & Birkinshaw (2008)	JoM	Theoretical	TYPE, OUT
Wilson et al. (2008)	OSt	Theoretical	TYPE
Andriopoulos & Lewis (2009)	OS	Empirical	TYPE, RLSP, COL, IND, OUT
Blatt (2009)	AMR	Theoretical	COL, OUT
Carmeli & Halevi (2009)	LQ	Theoretical	TYPE, COL, IND, OUT
Gibbs (2009)	HUM	Empirical	TYPE, RLSP, COL
Nemanich & Vera (2009)	LQ	Empirical	IND, OUT
Andriopoulos & Lewis (2010)	LRP	Empirical	TYPE, COL, OUT
Chung & Beamish (2010)	OS	Empirical	TYPE, RLSP, COL, OUT, DYN
Farjoun (2010)	AMR	Theoretical	TYPE, RLSP
Gebert et al. (2010)	OS	Theoretical	TYPE, RLSP, COL, OUT
Gotsi et al. (2010)	HUM	Empirical	TYPE, RLSP, COL
Lavie et al. (2010)	AMA	Theoretical	TYPE, RLSP, COL, OUT

Schreyögg & Sydow (2010)	OS	Theoretical	TYPE, RLSP, COL
Smith et al. (2010)	LRP	Empirical	TYPE, RLSP, COL, IND
Tilson et al. (2010)	ISR	Theoretical	TYPE
Chen & Miller (2011)	AMP	Theoretical	IND
Harrison & Corley (2011)	OS	Empirical	TYPE
Lu & Ramamurthy (2011)	MISQ	Empirical	COL, OUT
Miron-Spektor et al. (2011)	OBHDP	Empirical	TYPE, COL, IND, OUT
Pentland et al. (2011)	OS	Empirical	TYPE
Rosing et al. (2011)	LQ	Theoretical	IND, OUT
Smith & Lewis (2011)	AMR	Theoretical	TYPE, RLSP, COL, IND, OUT, DYN
Sydow et al. (2011)	LQ	Empirical	TYPE, COL
Bansal et al. (2012)	AMP	Theoretical	TYPE, COL
Carlo et al. (2012)	MISQ	Empirical	DYN
Fang (2012)	MOR	Theoretical	TYPE, RLSP
Smith et al. (2012)	AMLE	Theoretical	TYPE, RLSP, COL, IND, OUT
Chan-Serafin et al. (2013)	OS	Theoretical	TYPE
Ellis et al. (2013)	JoAP	Empirical	TYPE
Huber et al. (2013)	JMIS	Empirical	DYN
Jay (2013)	AMJ	Empirical	TYPE, RLSP, IND, OUT, DYN
Klarner & Raisch (2013)	AMJ	Empirical	TYPE, COL, OUT, DYN
Pierce & Aguinis (2013)	JoM	Theoretical	RLSP
Scherer et al. (2013)	JMS	Theoretical	TYPE, COL, OUT
Schmitt & Raisch (2013)	JMS	Empirical	TYPE, RLSP, COL, OUT
Velu & Stiles (2013)	LRP	Empirical	COL
Wright et al. (2013)	JMS	Empirical	IND
Ahearne et al. (2014)	SMJ	Empirical	TYPE, IND, OUT
Ashforth & Reingen (2014)	ASQ	Empirical	TYPE, RLSP, COL, IND, OUT, DYN
Ashforth et al. (2014)	OS	Theoretical	TYPE, OUT
Bartunek & Rynes (2014)	JoM	Theoretical	TYPE, RLSP
Chen (2014)	AMR	Theoretical	RLSP
Dameron & Torset (2014)	JMS	Empirical	TYPE, IND
Hahn et al. (2014)	AMR	Theoretical	IND, OUT
Harvey (2014)	AMR	Theoretical	OUT, DYN
Im & Rai (2014)	ISR	Empirical	TYPE, COL, OUT
Klang et al. (2014)	IJMR	Theoretical	TYPE
P. P. Li (2014)	MOR	Theoretical	RLSP
X. Li (2014)	MOR	Theoretical	IND
Michaud (2014)	OSt	Empirical	TYPE, COL, DYN
Patil & Tetlock (2014)	ROB	Theoretical	COL, IND
Putnam et al. (2014)	HUM	Theoretical	TYPE, RLSP, COL
Rapp et al. (2014)	JoAP	Empirical	RLSP
Rosso (2014)	OSt	Empirical	TYPE, RLSP, COL, OUT
Silva et al. (2014)	HUM	Empirical	TYPE, RLSP, COL,IND
Smith (2014)	AMJ	Empirical	TYPE, RLSP, COL, IND, OUT, DYN
Wareham et al. (2014)	OS	Empirical	TYPE, RLSP, COL

TABLE 2: Past 25 Years of Paradox Research – Nature

Domains	Exemplary Articles
Nature – Types	
At what levels does paradox surface?	
Field	
Academic/Practitioner	Bartunek & Rynes (2014)
Interorganizational ties	Chung & Beamish (2010); Das & Teng (2000); Lado et al. (2008); Murray & Kotabe (1999)
National culture	Fang (2012)
Organizations	
Ambidexterity/Change/Innovation	Andriopoulos & Lewis (2009); Farjoun (2010); Klarner & Raisch (2013); Raisch & Birkinshaw (2008); Schmitt & Raisch (2013); Smith (2014); Smith & Tushman (2005)
Governance/Strategy	Dameron & Torset (2014); Smith et al. (2010); Sundaramurthy & Lewis (2003); Wareham et al. (2014)
Social enterprise/Social responsibility	Jay (2013); Margolis & Walsh (2003); Smith et al. (2012)
Identity/Culture	Ashforth & Reingen (2014); Chreim (2005); Harrison & Corley (2011); Lynn (2005)
Routines/Practices	Orlikowski (1992); Orlikowski & Robey (1991); Pentland et al. (2011)
Teams	
Creativity	Andriopoulos (2003); Rosso (2014)
Goals	Ellis et al. (2013) Murnighan & Conlon (1991)
Individuals	
Creativity	Miron-Spektor, Gino, et al. (2011)
Leadership	Denison et al. (1995); Gebert et al. (2010)
Everyday work	Lüscher & Lewis (2008)
Multi-level	Andriopolous & Lewis (2009); Bradach (1997); Schreyögg & Sydow (2010)
What categories of paradoxes exist?	
Typology of Paradoxes	Lewis (2000); Lüscher & Lewis (2008); Smith & Lewis (2011)
Learning	
Exploration vs. exploitation	Andriopoulos & Lewis (2009); Lavie et al. (2010); Raisch & Birkinshaw (2008); Smith & Tushman (2005)
Stability vs. change	Farjoun (2010); Graetz & Smith (2008); Klarner & Raisch (2013); Pentland et al. (2011)
Short-term vs. long-term	Das & Teng (2000)
Organizing	
Alignment vs. flexibility	Adler et al. (1999); Bradach (1997); Das & Teng (2000); Gibson & Birkinshaw (2004); Smith & Tushman (2005)
Control vs. autonomy/empowerment	Gebert et al. (2010); Michaud (2014); Sundaramurthy & Lewis (2003); Wareham et al. (2014)
Belonging	
Competing identities	Ashforth & Reingen (2014)
Individual vs. collective	Deephouse (1999); Harrison & Corley (2011); Wareham et al. (2014)
Performing	
Cooperation vs. competition	Chung & Beamish (2010); Das & Teng (2000); Lado et al. (1997)
Multiple objectives and stakeholders	Das & Teng (2000); Jay (2013); Margolis & Walsh (2003); Scherer et al. (2013); Smith et al. (2012)

Nature – Relationships	
How do the poles relate?	
Complementary	Buenger et al. (1996); Chreim (2005); Gebert et al. (2010); Gibson & Birkinshaw (2004)
Mutually defining	Farjoun (2010); Graetz & Smith (2008); Khazanchi et al. (2007); Orlikowski (1992); Orlikowski & Robey (1991); Schmitt & Raisch (2013); Schreyögg & Sydow (2010); Smith & Lewis (2011)
How do paradoxical relationships become salient?	
Nature of Paradoxes	Smith & Lewis (2011)
Environmental Conditions	
Plurality/Competition	Adler et al. (1999); Denis et al. (2012); Jay (2013); Lewis & Grimes (1999); Margolis & Walsh (2003)
Change/Innovation	Chung & Beamish (2010); Lüscher & Lewis (2008); Smith & Lewis (2011)
Scarcity	Raisch & Birkinshaw (2008); Smith (2014); Smith & Tushman (2005)
Individual Approaches	
Paradoxical inquiry/framing	Lüscher & Lewis (2008); Smith & Tushman (2005)
Using meta-theory	Orlikowski (1992); Orlikowski & Robey (1991); Pierce & Aguinis (2013)
Views that encompasses both poles	Bradach (1997); Lado et al. (1997); Lado et al. (2008); Margolis & Walsh (2003); Schmitt & Raisch (2013)
Influence of culture and world views	Chen (2014); Fang (2012); Johnston & Selsky (2006); P. P. Li (2014)
Salient to Researchers	Jay (2013); Lüscher & Lewis (2008); Smith (2014)

TABLE 3: Past 25 Years of Paradox Research – Approaches

Domains	Exemplary Articles
Approach – Collective	
At what level is paradox addressed?	
Population	O'Neill et al. (1998)
Inter-organizational	Chung & Beamish (2010); Im & Rai (2014); Sydow et al. (2011)
Organization	Adler et al. (1999); Klarner & Raisch (2013); Schmitt & Raisch (2013); Velu & Stiles (2013)
Senior Teams/Boards	Michaud (2014); Smith (2014); Smith & Tushman (2005)
Business Unit/Plant	Gibson & Birkinshaw (2004); Khazanchi et al. (2007)
Team	Ashforth & Reingen (2014); Blatt (2009); Drach-Zahavy & Freund (2007); Gebert et al. (2010); Miron-Spektor, Gino, et al. (2011)
Multi-level/Nested	Andriopoulos & Lewis (2009, 2010); Bradach (1997); Schreyögg & Sydow (2010); Wareham et al. (2014)
How is paradox addressed collectively?	
Acceptance and 'working through'	Lüscher & Lewis (2008); Murnighan & Conlon (1991); Rosso (2014); Smith et al. (2012)
Spatial/Structural separation	Bansal et al. (2012); Bradach (1997); Lavie et al. (2010); Smith & Tushman (2005)
Temporal separation	Adler et al. (1999); Chung & Beamish (2010); Klarner & Raisch (2013); Lavie et al. (2010)
Synthesis/Integration	Adler et al. (1999); Deephouse (1999); Schmitt & Raisch (2013)
Combination of approaches	Adler et al. (1999); Drach-Zahavy & Freund (2007); Gibson & Birkinshaw (2004)
Differentiation and integration	Andriopoulos & Lewis (2009); Smith (2014); Smith & Tushman (2005)
Dynamic decision making/Oscillating	Smith (2014)
Approach – Individual	
Who is engaging in paradox management?	
Senior executives	Denison et al. (1995); Fiol (2002); Smith (2014); Smith et al. (2012); Smith & Tushman (2005)
Middle or front-line managers	Fiol (2002); Hatch (1997); Huxham & Beech (2003); Leonard-Barton (1992); Lüscher & Lewis (2008)
Actors across levels	Andriopoulos & Lewis (2009); Dameron & Torset (2014); Gibson & Birkinshaw (2004)
How is paradox addressed individually?	
Defensiveness/Discomfort	Ashforth & Reingen (2014); Kahn (1990); Leonard-Barton (1992); Lewis (2000); Vince & Broussine (1996)
Paradoxical thinking/Sensemaking	Hahn et al. (2014); Jay (2013); Lüscher & Lewis (2008); Miron-Spektor, Gino, et al. (2011); Smith & Tushman (2005); Westenholz (1993)
Reflexivity/Discursive thinking	Dameron & Torset (2014); Ellis et al. (2013); Huxham & Beech (2003)
Behavioral complexity	Denison et al. (1995); Hart & Quinn (1993)
Humor	Hatch (1997); Hatch & Ehrlich (1993)
Rhetorical skills	Andriopoulos & Lewis (2009); Fiol (2002)
Response informed by national culture	Adler et al.(1999); Chen & Miller (2011)

TABLE 4: Past 25 Years of Paradox Research – Impact

Domains	Exemplary Articles
Impact – Outcomes	
What are potential negative outcomes?	
Ambivalence	Ashforth et al. (2014); O'Neill et al. (1998)
Chaos	Thiétart & Forgues (1995)
Collapse	Drummond (1998)
Conflict	Chung & Beamish (2010); Smith et al. (2012)
Organizational decline	Bartunek et al. (2000); Chung & Beamish (2010); Das & Teng (2000); Drummond (2008); Leonard-Barton (1992); Smith et al. (2012); Sundaramurthy & Lewis (2003)
What are potential positive outcomes?	
Ambidexterity	Gibson & Birkinshaw (2004); Im & Rai (2014); Nemanich & Vera (2009); Raisch & Birkinshaw (2008)
Creativity/Innovation	Gebert et al. (2010); Harvey (2014); Miron-Spektor, Gino, et al. (2011); Rosso (2014); Smith et al. (2012)
Effectiveness	Denison et al. (1995) ; Drach-Zahavy & Freund (2007)
Learning	Huxham & Beech (2003)
Legitimacy	Scherer et al. (2013)
Sustainability/Long term performance	Andriopoulos & Lewis (2009); Chung & Beamish (2010); Klarner & Raisch (2013); Schmitt & Raisch (2013); Smith (2014); Smith & Lewis (2011); Smith & Tushman (2005)
Impact – Dynamics	
What contexts trigger dynamics?	
Plurality	Ashforth & Reingen (2014); Huber et al. (2013)
Change	Bartunek et al. (2000); Boiral (2007); Chung & Beamish (2010)
Scarcity	Jay (2013); Smith (2014)
How does framing drive dynamics?	
Attend to change frequency and timing	Klarner & Raisch (2013)
Discourse surfaces tensions	Chreim (2005); Hatch (1997)
Shifts understanding of outcomes	Jay (2013)
Redefines issues as paradoxical	Lüscher & Lewis (2008); Voyer (1994)
How do paradoxes unfold?	
Dialectical process/Synthesis	Harvey (2014)
Negative and positive feedback cycles	Stacey (1995)
Oscillation between poles	Ashforth & Reingen (2014); Huber et al. (2013)
Vicious cycles/Escalation	Sundaramurthy & Lewis (2003); Drummond (1998, 2008)
Virtuous cycles/Dynamic equilibrium	Smith & Lewis (2011); Smith (2014)